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Original Articles

THE CLASSIFICATION OF PULMONARY TUBERCULOSIS

AND STATISTICAL REPORTS OF SANATORIUMS

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INTRODUCTION

The results in general of the treatment of pulmonary tuberculosis are most encouraging. It is said to be the most curable of all chronic diseases, and many autopsy statistics are quoted to prove that even under the most unfavorable conditions healing occurs in a large proportion of those affected. There are to-day few physicians of large experience who have not repeatedly observed the healing of pulmonary tuberculosis. In the mind of the laity the former pessimistic view is gradually waning, and in many instances is replaced by the belief that every case of tuberculosis is curable. Some physicians of wide experience even go so far as to say that every case of non-acute pure pulmonary tuberculosis is curable. Neither of these statements, however, can stand in the light of our present knowledge. It is an easy task so to improve the general condition of a patient as to give him all the outward appearances of health; but it is a far different task to get him into such a general and pulmonary condition that after a few months at work he will not relapse.

Pathologic anatomy furnishes abundant proof that pulmonary tuberculosis is curable. The statistics of Naegeli, of Blumer and Lartigau, of Vibert, of Osler, of Loomis, all show how frequent is the spontaneous or natural cure. "In all tubercles two processes go on, the one caseation, destructive and dangerous, and the other sclerosis, conservative and healing. The ultimate result in a given case depends on the capabilities of the body to restrict and limit the growth of the bacilli. In the granulation products and associated pneumonia a scar tissue is formed while the smaller caseous areas become impregnated with lime salts. To such conditions alone should the term healing be applied. When the fibroid change encapsulates but does not involve the entire tuberculous tissue, the tubercle may be termed involuted or quiescent, but is not destroyed. When cavities of any size have formed, healing, in the proper sense of the term, does not occur," (Osler).

Healing is not absolute in the strictest sense of the word so long as the scars enclose virulent bacilli and W. Green has found that until scar tissue or calcification entirely replaces all caseation, virulent tubercle bacilli may still be present. Large foci and even cavities can be so thickly imbedded in scar tissue that the tuberculosis can remain stationary throughout an entire lifetime. This "relative healing" then has the value of an absolute cure. "Many phthisikers do not live long enough to die of their tuberculosis" (Penzoldt). Clinical experience also teaches us that many patients who have had pulmonary tuberculosis recover and live out their natural days.

CLASSIFICATION

The classification of pulmonary tuberculosis has often been attempted, and even to-day no perfectly satisfactory classification has been achieved A patient may have an acute onset, while later the disease may become subacute and finally chronic, proceeding to complete arrest or to termination with an acute type of pulmonary tuberculosis or with acute miliary tuberculosis. Such variations in the disease render classification difficult.

The following classification of the various forms of tuberculosis occurring in the lungs is satisfactory but insufficient for accurate clinical description of the various stages of the disease treated in sanatoriums:

TUBERCULOSIS OF THE LUNGS

I. Acute miliary tuberculosis.
II. Acute pulmonary tuberculosis.
  1. Pneumonic tuberculosis.
  2. Bronchopneumonic tuberculosis.
III. Subacute pulmonary tuberculosis.
IV. Chronic pulmonary tuberculosis.
  1. Chronic ulcerative pulmonary tuberculosis.
  2. Fibroid phthisis.

Classifications have been based on the origin of the disease (hereditary, congenital, or acquired); on the temperament of the patient (erethismic or torpid); on the age (infantile, developmental, adult and senile); on dyscrasias (gouty, scrofulous, diabetic, alcoholic, luetic, hysterical); on the ease of diagnosis (latent, larval, manifest); on the onset (catarrhal, anemic, dyspeptic, pleuritic, hemoptic, febrile, nervous, dyspneic); on the course (active and stationary and progressive; remitting, intermitting and retrogressive; acute, subacute and chronic); on the extent of the lesions (circumscribed, disseminated, more diffuse; or incipient, limited, moderately extensive and advanced); on the pathologic changes (consolidation, softening, cavity formation; germination, conglomeration, softening, cavity formation; parenchymatous, interstitial, bronchitic and postpleuritic forms); on the degree of susceptibility (decided, yielding, or lost organic resistance); on the secondary infections (pure tuberculosis, stage of mixed infection, or phthisis), and in part at least on prognosis (phthisis incipiens, confirmata et desperata).

The usual form of tuberculosis treated in sanatoriums falls under the head of chronic pulmonary tuberculosis and the classification at present under discussion deals mainly with chronic pulmonary tuberculosis, though acute phthisis and acute pneumonic phthisis, as well as miliary tuberculosis of the lungs can also be classified in it. These varieties occur as complications in patients with the more chronic types.

Pulmonary tuberculosis is a relapsing disease, and the results must therefore be considered under two heads, immediate and ultimate. The immediate results may be manipulated, even unconsciously, but the test of time is rigorous, and "living" and "dead" admit of no personal equation or variation of definition. The ultimate results, therefore, after a sufficient lapse of time show clearly the true results of treatment. The effect on the ultimate results of the convalescent homes, of the agricultural colonies, and of other institutions for the aid of patients on discharge from the sanatorium has not yet been worked out. Their value must be considerable. The immediate results are much more difficult to handle, and comparison of these results from different sanatoriums has, on account of the lack of uniformity, up to this time been impossible or at least of little or no value.

Sanatorium patients must be classified on admission, on discharge, and according to the ultimate results. Many classifications have been suggested, but none so far is fully satisfactory. A classification should take into account, not only the amount of disease in the lungs but the actual condition of the patient. It must consider symptoms, as well as the pathologic and general conditions, for no one alone is sufficient. The pathologic conditions on which some classifications depend are based on the interpretation of the physical signs, which are, as is well known, notoriously uncertain. The personal equation should be eliminated as far as possible. The divisions, or classes, should be as sharply separated as possible and not too numerous, three being the number most widely advocated for many years. Prognosis and classification are closely associated.

A.—Classification on Admission

The classifications used in pulmonary tuberculosis may be said to be based, first, on the pathologic conditions in the lungs; second, on one or more symptoms, or third, on the pathology, the symptomatology and the general condition of the pulmonary invalid.

I.—Based on Pathology

Most classifications have been based on the pathologic process in the lungs; for example, I, fibrosis, II, colliquative necrosis; or, I, infiltration, II, consolidation, III, cavity formation. Brehmer[1] (1889) recognized, I, infiltration, II, cavity formation, and, III, colliquation. More recently Petruschky[2] (1897) has suggested, I, invasion of the lymphatic glands; II, formation of tubercles in the tissues, skin, lungs, etc. (closed tuberculosis), and, III, tissue necrosis (open tuberculosis) which he subdivided into, 1, tuberculosis proper; 2, a transition period of febrile attacks, and, 3, septicemia. While recent pathologic work upholds this in part, the classification really divides pulmonary tuberculosis into two stages, closed and open, the latter of which is subdivided according to symptoms. It is not as satisfactory as Turban's classification, which has been widely adopted.

Turban[3] classifies patients wholly on the physical findings, which, changing as they do, and occurring with such different symptoms render this scheme far from accurate in portraying in what real stage of the disease any patient may be, a point he early acknowledged. By this classification, Stage I includes those patients whose slight lesion does not exceed one lobe or two half lobes. Stage II includes those whose slight lesion extends further than Stage I but at most to two lobes or a severe lesion extending at most to the volume of one lobe. Under Stage III are all not under I and II. "Slight lesion" is synonymous with infiltration and "severe lesion" with consolidation and excavation. Purely pleuritic dulness of slight extent is left out of account. Slight alterations in the breath sounds, for example, harsh breathing or prolonged expiration without change in percussion and without râles, are not to be considered. This properly balances both the extent and intensity of the pathologic changes, two factors, one of which is ignored in most anatomic classifications.[4]

The Hanseatic League[5] has adopted a classification with eight divisions, with slight gradations one from another, for example, I, simple catarrh of one apex; II, of both apices; III, widespread catarrh; IV, infiltration of small extent at one apex and so on. This, like Turban's classification, completely ignores symptoms and the general state of health, and gives no idea of the patient's real condition.

The Imperial Board of Health[6] of Germany has suggested the following classification and has used it in the report, which it publishes, of all the patients treated in Germany:

The side is first indicated

I. Slight, limited to a small area of one lobe, especially at the apex, and not extending below the clavicle nor the spine of the scapula, with or without fine, but without tympanitic râles.

II. Area of the disease of wider extent than I, of less than III.

III. Involvement at least of a whole or of several whole lobes, or signs of cavity formation.

This classification, evidently based on Turban's, is hardly to be preferred to his, but it restricts the first class. Both this and Turban's include in the third class, which is too broad, many patients who do remarkably well. The classification suggested by Burton-Fanning takes into account only the extent and not the intensity of the pulmonary disease.

It has been suggested by the last International Conference at Vienna[7] that the Turban classification of the extent of physical signs should be modified. This modification, known as the Turban-Gerhardt classification, is as follows:

TURBAN-GERHARDT CLASSIFICATION

R=right. L=left.

I. Disease of slight severity, limited to small areas of one lobe; that, for instance, in case of affection of both apices may not extend beyond the spine of scapula and the clavicles; in case of affection of one apex, frontal, beyond the second rib.

II. Disease of slight severity, more extensive than I, but affecting at most the volume of one lobe, or severe disease, extending at most to the volume of one-half lobe.

III. All cases extending beyond II, and all such with considerable cavities.

By disease of slight severity is to be understood: disseminated foci manifested by slight dulness, impure, rough or weak vesicular, vesiculobronchial, or bronchovesicular breathing and fine and medium râles.

1. Mittheilungen aus Dr. Brehmer's Heilanstalt, Wiesbaden, 1889, p. 55.
2. Ueber die Behandlung der Tuberkulose nach Koch, Deutsch, med. Wchnschr., 1897, No. 39.
3. The Diagnosis of Tuberculosis of the Lung, New York, 1906, p. 42.
4. Wilkinson: Brit. Med. Jour., June 13, 1902. I. Fraenkel: Specielle Pathologie und Therapie der Lungenkrankheiten, II, 713.
5. Die Handhabung des Heilverfahrens bei Versicherten im Jahre 1896, Hamburg, 1897.
6. Tuberculosis, Berlin, 1907, vi, 140.
7. Tuberculosis, Berlin, 1907, vi, 559.

By severe disease: compact infiltration recognized by great dulness, very weak (indeterminate) bronchovesicular breathing, with or without râles.

Considerable cavities to be recognized by a tympanitic note, amphoric breathing, and extensive, coarse, consonating râles come under Stage III.

Pleuritic dulness, if only of a few centimeters extent, is to be left out of account; if it is considerable, pleuritis should be specially mentioned under tuberculous complications.

The stage of disease is to be indicated for each side separately. The case, as a whole, is to be classified according to the more diseased side; for example: R II, L I=Stage II.

The objection to this classification is the unevenness of the distribution; and, while it divides the first group of Turban, which really needs division, the adoption of the summary, discussed elsewhere in this report, divides that group in a very satisfactory manner, and the enlargement of the third group makes the Turban-Gerhardt classification of less value.

II.—BASED ON SYMPTOMS

Previous to the discovery of auscultation and of more recent pathologic knowledge, classifications were based upon the severity of the general and localizing symptoms, for example, early or beginning, middle or confirmed and last or terminal stages. Few classifications have recently been founded purely upon symptoms. Meissen[8] has suggested dividing all patients into afebrile and febrile, which latter he subdivides into those with high fever (101.3° and over) and those with low fever (below this). Von Ruck[9] and Spengler[10] also use fever for the first division.

III.—BASED ON SYMPTOMS AND PATHOLOGY

While Laennec, Bayle, Clarke, Louis and Alison had all based classifications on symptoms and physical signs, the first classification in America based on these data was that suggested by J. W. Gleitsmann in the biennial report of the Mountain Sanitarium for Pulmonary Diseases (1877), the second sanatorium in America for the treatment of pulmonary diseases. He suggested the following:

1. Apical catarrh and infiltration of the smallest extent.
2. Extended infiltrations or small destructions with preserved general constitution.
3. Extended infiltration with hectic symptoms, cavities, constitution broken down.
4. Acute miliary tuberculosis.
5. All such with other diseases (all non-tuberculous diseases).

This classification bears close resemblance to the one recently suggested by the National Association for the Study and Prevention of Tuberculosis.

Trudeau's classification (1887), on which that of the National Association is based, takes into account both the pathology (that is, physical signs) and the local and general involvement. It is as follows:

1. *Incipient.*—Cases in which both the physical and rational signs point to but slight local and constitutional involvement.
2. *Advanced.*—Cases in which the localized disease process is either extensive or in an advanced stage, or in which, with a comparatively slight amount of pulmonary involvement, the rational signs point to grave constitutional impairment or to some complication.
3. *Far Advanced.*—Cases in which both the rational and physical signs warrant the term.

The classification suggested to the American Climatological Association[11] by a committee appointed for that purpose is based largely on Trudeau's, but prefixes an incipient stage to what are termed the first, second and third stages. This classification, which was not adopted and has apparently been employed by no one, is as follows:

Incipient.—Slight physical and subjective signs, with history indicative of pulmonary tuberculosis. Sputa, if present, without bacilli.

First stage: Definite physical signs of localized infiltration; total involvement less than half a lobe, whether at one or more points; cough and expectoration with bacilli; constitutional symptoms slight. (In disseminated cases, expectoration and bacilli may be absent with constitutional symptoms more severe.)

Second stage: Infiltration of single or multiple areas approaching or equal in amount to one lobe; or smaller area in stage of softening; cough and expectoration with bacilli; constitutional symptoms severe.

Third stage: Infiltration in excess of one lobe or, if less, in stage of well-developed excavation; more severe constitutional symptoms.

Koeniger's[12] classification (1, slight with one apex; 2, medium severity with one or two apices to a greater extent; 3, severe, one or more whole lobes), leaves too much to the personal equation and depends almost entirely on "extent" alone. Meissen[8] has prefixed a prophylactic stage before Stage I of Turban and added a hectic stage after Stage III of Turban. Von Ruck[9] divides his patients into those with chronic pulmonary tuberculosis and those with phthisis, each of which he subdivides into afebrile and febrile. Each class under "phthisis" he further subdivides into three, first, second and third stages. This classification can not be recommended, as it has too many classes, and being based in part on the amount of expectoration, must be far from accurate. Spengler's[12] classification is much like von Ruck's.

King's[13] classification (of I, early cases with, 1, mild and, 2, those with acute symptoms; II, advanced cases with, 1, favorable or, 2, unfavorable symptoms; and, III, "long-standing cases" (over one year) with, 1, ulceration, and, 2, with fibrosis predominating) leaves too much to the personal equation to be of marked value. There is no generally adopted scheme in England, as Bulstrode's Report[14] shows. There are so many classifications used that it is very difficult indeed to compare the statistics; and some are so complex that they can not be recommended, for example, Campbell[15] divides his patients into those with one or both lungs affected. He makes the three usual divisions under the first (one lung) and tries to classify by the conditions of the two lungs, all the possibilities under five heads under the second.

The best classification so far suggested is that adopted by the National Association for the Prevention and Study of Tuberculosis and based largely on Trudeau's and not on Turban's. The incipient stage is very narrowly defined, in the hope of encouraging early diagnosis. This makes the "moderately advanced" stage

8. Was können die Fachärzte zunätchst zur Bekämpfung der Tuberkulose thun? Therap. Monatsch., 1897, p. 582. See also Schroeder and Blumenfeld, Therapie der Lungensch. Leipzig, 1904, p. 125.
9. Classification for Cases of Pulmonary Tuberculosis and Phthisis, Tr. Am. Climat. Assn., 1903, xx, 272.
10. Koch's Festschrift, 1903, p. 119.
11. Tr. Am. Climat. Assn., 1903, xix, 23.
12. Erfahrungen über Lungentuberkulose und Lippspringe, Therap. Monatsch. 1895, p. 535. (quoted by Turban.)
13. Seventh An. Rep. Loomis Sanatorium, 1903.
14. Fifty-fifth An. Rep. to the Local Government Board, 1905-1906; On Sanatoriums for Consumptives and Certain Other Aspects of the Tuberculosis Question, London, 1908, p. 59.
15. Brit. Med. Jour., 1905, II, 852.

include patients differing much more widely than those in the upper ranks of the "moderately advanced" and in the incipient stages. The exact amount of involvement is not stated, but any patient with signs extending below the second rib should be classified as advanced. The classification is as follows:

INCIPIENT (FAVORABLE)

Slight initial lesion in the form of infiltration limited to the apices or a small part of one lobe.

No tuberculous complications. Slight or no constitutional symptoms (particularly including gastric or intestinal disturbances or rapid loss of weight).

Slight or no elevation of temperature or acceleration of pulse at any time during the twenty-four hours, especially after rest.

Expectoration usually small in amount or absent.

Tubercle bacilli may be present or absent.

MODERATELY ADVANCED

No marked impairment of function, either local or constitutional.

Localized consolidation moderate in extent, with little or no evidence of destruction of tissue;

Or disseminated fibroid deposits.

No serious complications.

FAR ADVANCED

Marked impairment of function, local and constitutional.

Localized consolidation intense;

Or disseminated areas of softening;

Or serious complications.

ACUTE MILIARY TUBERCULOSIS

B.—Classification on Discharge

Greater diversity of opinion and of usage exists in the classification on discharge than on entrance. The plan suggested by the German Imperial Board of Health[6] is excellent but impracticable:

1. Absolute healing.
2. Relative healing.
3. Marked improvement and transfer to a more favorable stage.
4. Slight improvement in the same stage.
5. Stationary.
6. Slight deterioration in the same stage.
7. Marked deterioration and passage to a less favorable stage.
8. Death.

Healed, well, cured, apparently cured, arrested, greatly improved, able to work and positive have all been used more or less interchangeably, which renders comparison of results impossible. The classification of positive, negative and died (Turban) is of little real value and is based in part on the individual judgment. Ability to work on discharge unless tested in the sanatorium depends largely on the individual judgment; and this criterion, while necessary by law for the insurance sanatoriums of Germany, is hardly to be recommended for use elsewhere. It is in reality based on economic and not on medical standards. Classifications using such terms as "well," "almost well," "much improved," have much to do with the personal equation.

It seems necessary to employ more classes here than on admission and five are generally used. Trudeau's classification, on which the classification of the National Association for the Prevention and Study of Tuberculosis is based, is almost universally used in America, and is as follows:

1. *Apparently Cured.*—Cases in which the rational signs of phthisis and the bacilli in the expectoration have been absent for at least three months or who have no expectoration at all; any abnormal physical signs remaining being interpreted as indicative of a healed lesion.

2. *Arrested.*—Cases in which cough, expectoration and bacilli are still present, but in which all constitutional disturbance has disappeared for several months; the physical signs being interpreted as indicative of a retrogressive or arrested process.

3, 4. *Improved and Failed.*—Trudeau has not defined these.

5. *Died.*

The classification used by Bowditch[16] at the Sharon and Massachusetts State Sanatoriums does not employ the term "apparently cured" but makes "arrest" include the cases of all patients "in whom active symptoms have disappeared and there is an apparent return to health." This division is too large and needs subdivision.

The National Association for the Study and Prevention of Tuberculosis has slightly modified Trudeau's classification, as follows:

Progressive (unimproved).—All essential symptoms and signs unabated or increased.

Improved.—Constitutional symptoms lessened or entirely absent; physical signs improved or unchanged; cough and expectoration with bacilli usually present.

Arrested.—Absence of all constitutional symptoms; expectoration and bacilli may or may not be present; physical signs stationary or retrogressive; the foregoing conditions to have existed for at least two months.[17]

Apparently Cured.—All constitutional symptoms and expectoration with bacilli absent for a period of three months; the physical signs to be those of a healed lesion.

The term "quiescent" is placed under "improved" in this classification. "Apparently cured" leaves much for the individual standard of judgment when it requires the physical signs to be those of a healed lesion. This admits widely different interpretations. In the statistics from the Adirondack Cottage Sanitarium the cases of all patients who have moderately coarse râles or more than a few fine râles at one apex extending at most to the clavicle or the level of the second vertebral spine have been termed "arrested." The justification of this interpretation of "apparently cured" is borne out by the ultimate results obtained at this institution. The use of the tuberculin test as a test of cure has been suggested by many observers. The results obtained in this way and by clinical methods do not agree, as many patients clinically "apparently cured" react to tuberculin. Nagel[18] discharged 114 of 183 patients as clinically cured, and of these 114 patients 38 per cent. reacted to tuberculin. Careful clinical observations determine with sufficient accuracy whether or not a patient is "apparently cured." Burton-Fanning[19] has advocated subdividing "arrest" into two classes: those able and those unable to work. Burton-Fanning's "recovery" implies fitness for work.

C.—Classification for Ultimate Results

The real test of any treatment is of course the division of all patients into two classes, living and dead. The division of the first class is difficult, but "living" should be subdivided, for it is manifestly unfair to class those tottering on the brink of the grave with patients who for years have been well and who work under ordinary conditions of life. Here ability to work is of most value, for

16. Tenth Ann. Rep. Sharon Sanatorium.

17. The length of time mentioned is, of course, somewhat arbitrary, but is intended to cover the cases which frequently occur, where the patients leave a sanatorium for various reasons, contrary to advice, after a stay of a few weeks, although all active symptoms may have ceased completely soon after entrance.

18. Beitr. z. Klin. d. Tuberk., 1906, v. 451.

19. The Open-Air Treatment of Pulmonary Tuberculosis, Chicago, 1905, p. 61.

it is difficult to obtain a physician's report on the general or pulmonary condition or even on the examination of the sputum.

At the Adirondack Cottage Sanitarium the terms "well" and "living" have been used. "Well" includes all patients known to be enjoying good health without a relapse for a period of two years, while "living" includes many patients who but for the time limit would be classed as "well," and also many about whose state of health the present information is not sufficiently definite.

The National Association for the Study and Prevention of Tuberculosis defines "cured" as follows: "All constitutional symptoms and expectoration with bacilli absent for a period of two years under ordinary conditions of life. As previously stated, an absolute cure can be determined only after death. At the Adirondack Cottage Sanitarium it is impossible to use this term "cured," for sufficient information can not be obtained.

THE CLASSIFICATION ADVISED

After careful consideration of all these factors, the following classification to be used on admission, on discharge, and for ultimate results, is probably the best. The classification of the incipient stage as defined by the National Association has been rearranged but very slightly altered. The definition of "moderately advanced" has been very slightly altered. The other definitions have been changed very slightly, but under ultimate results the term "well" has been inserted.

I.—Classification on Admission

Incipient

Slight or no constitutional symptoms (including particularly gastric or intestinal disturbance or rapid loss of weight). Slight or no elevation of temperature or acceleration of pulse at any time during the twenty-four hours.

Expectoration usually small in amount or absent. Tubercle bacilli may be present or absent.

Slight infiltration, limited to the apex of one or both lungs or a small part of one lobe.

No tuberculous complications.

Moderately Advanced

No marked impairment of function, either local or constitutional.

Localized consolidation, moderate in extent, with slight or no evidence of cavity formation.

No serious complications.

Far Advanced

Marked impairment of function, local and constitutional.

Marked consolidation of an entire lobe;

Or disseminated areas of beginning cavity formation;

Or serious complications.

Miliary Tuberculosis

II.—Classification on Discharge

Apparently Cured

All constitutional symptoms and expectoration with bacilli absent for a period of three months; the physical signs to be those of a healed lesion.

Arrested

Absence of all constitutional symptoms; expectoration and bacilli may or may not be present; physical signs stationary or retrogressive; the foregoing conditions to have existed for at least two months.[20]

Improved

Constitutional symptoms lessened or entirely absent; physical signs improved or unchanged; cough and expectoration with bacilli usually present.

Unimproved or Progressive

All essential symptoms and signs unabated or increased.

Died

III.—Classification of Ultimate Results.

Cured

All constitutional symptoms and expectoration with bacilli absent for a period of two years under ordinary conditions of life.

Well

Patients who fulfill all the conditions required under "cured," but about whose sputum no definite information can be obtained.

Arrested

See "On Discharge."

Improved

See "On Discharge."

Progressive

See "On Discharge."

Dead

DEFINITION OF TERMS

Since the adoption by the National Association of their classification it has been clearly recognized among the workers in the different sanatoriums in America that, while this schema was almost universally employed, there was still great diversity in the way in which patients were classified.[21] Consequently, the American Sanatorium Association believed that the terms used in this classification should be defined exactly, and a committee was appointed to present a report to the association. I was a member of this committee and wish to acknowledge my indebtedness to the different members of the committee[22] for many suggestions that are contained in the following definitions. The best classification for purposes of comparison of results is that which to the greatest extent excludes the variation due to individual standards of judgment. These definitions are accordingly submitted, not with the idea that they are ultimate or final, but simply for the purpose of suggesting a working basis for physicians in different sanatoriums. Many minor points are of course far from satisfactory, but no classification is perfect.

Terms Used in Definition of "Incipient"

1. *Slight Constitutional Disturbance.*—Slight loss of appetite, of strength, of weight; lassitude; possibly slight acceleration of pulse or possibly slight elevation of temperature. The impairment of health may be so slight that the patient does not look or feel sick in the ordinary sense of the word.

2. *Slight Elevation of Temperature.*—Maximum temperature after rest never over 99.5 to 100 by mouth (or 100.5 per rectum).

3. *Slight Acceleration of Pulse.*—Maximum pulse-rate not over 90.

4. *Small Amount of Expectoration.*—Not over 30 c.c. in 24 hours.

5. *Absence of Tubercle Bacilli.*—Each monthly examination (if the sputum be negative) to consist of a careful microscopic examination, with a mechanical stage, of two smears, devoting at least three minutes to each smear, made from selected particles (at least six from different parts) of the sputum on each of three successive days. The morning sputum should always be obtained, or, better, the minute bits

20. The length of time mentioned is, of course, somewhat arbitrary, but is intended to cover the cases which frequently occur, where the patients leave a sanatorium for various reasons, contrary to advice, after a stay of a few weeks, although all active symptoms may have ceased completely soon after entrance.

21. Stubbert recognized in 1901 that the various stages should be more accurately defined and attempted to do so (Am. Climatological Assn., 1901, xvii, 161).

22. H. L. Barnes, L. Rosenberg, Estes Nichols, H. S. Goodall.

that some patients in an arrested stage raise at very infrequent intervals. It is not yet deemed wise to insist on digestion and centrifugalization or on inoculation of guinea-pigs.

6. *Infiltration.*—Physical signs: slight prominence of the clavicle, lessened movement of chest, narrowing of apical resonance with lessened movement of base of lung, slight or no change of resonance, distant or loud and harsh breathing, with or without some change in the rhythm (that is, prolonged expiration), vocal resonance possibly slightly increased; or fine or moderately coarse râles present or absent. If diagnosis be positive, any one of these.

7. *Apex.*—That portion of the lung situated above the clavicle and the third vertebral spine.

8. *A Small Part of One Lobe.*—An area of one or two intercostal spaces, or an area not exceeding 60 to 80 square centimeters in extent, according to the size of the patient. (An attempt is here made to include an area of a lobe not greater in extent than that included in two intercostal spaces.)

TERMS USED IN DEFINITION OF "MODERATELY ADVANCED"

9. *Marked Impairment of Function, Either Local or Constitutional.*—Local: Marked dyspnea on exertion, limiting seriously the patient's activity. Constitutional: Marked weakness, anorexia, tachycardia.

10. *Moderate Extent of Localized Consolidation.*—An area of one-half lobe or less, but may involve both apices; marked dulness, bronchial or decidedly bronchovesicular breathing; markedly increased vocal resonance; râles usually present. These signs are to be sharply limited as to area instead of gradually shading into normal physical signs.

11. *Evidence of Destruction of Tissue.*—Presence of tubercle bacilli or elastic fibers in the sputum or the presence of the physical signs of a cavity. There are no absolutely certain physical signs of cavity but a combination of any four of the following signs is to be taken as indicative of a cavity: 1, cracked-pot note; 2, amphoric breathing; 3, intense whispering pectoriloquy; 4, a veiled puff or post-tussive suction; 5, bubbling or resonant râles. "Physical signs of softening" do not admit of any definition, apart from that of cavity formation, and the term should not be used.

12. *Serious Complications.*—These should be limited to tuberculous complications, such as meningitis, pharyngitis, laryngitis (except slight thickening in the posterior interarytenoid space, and superficial ulceration of a vocal cord), enteritis, peritonitis, nephritis, cystitis, orchitis, adenitis (unless very slight), etc.

TERMS USED IN DEFINITION OF "FAR ADVANCED"

13. *Intense Localized Consolidation.*—This term should be replaced by "marked consolidation of an entire lobe." "Marked consolidation" indicates dulness merging into flatness, bronchial or tubular breathing and other signs of consolidation as defined in 10.

TERMS USED IN DEFINITION OF "APPARENTLY CURED"

14. *Constitutional Symptoms.*—These include elevation of temperature, loss of weight, loss of strength, night sweats, chills, tachycardia, cyanosis, loss of appetite, amenorrhea, etc.

15. *Physical Signs of a Healed Lesion.*—These may embrace every physical sign of infiltration or consolidation (see 6, 10), with the exception of râles, which must be permanently absent, except possibly a few fine râles at the base, probably atelectatic in origin, and at one apex or over a small part of one lobe. Râles in the latter two places are to be heard only during the cough or the inspiration which follows the cough at the end of a prolonged expiration.

TERMS USED IN DEFINITION OF "IMPROVED"

16. *Constitutional Symptoms Lessened or Entirely Absent.*—By this term is meant an improvement in the general condition as shown either by a gain in both weight and strength or by reduction of previous febrile temperature to normal without loss of strength.

TERMS USED IN DEFINITION OF "UNIMPROVED" OR "PROGRESSIVE"

17. *Essential Symptoms and Signs.*—These include, among others, weight, strength, appetite, night sweats, hemoptysis, pleurisy, dyspnea, temperature, pulse-rate, dulness, changes in vocal resonance and respiratory movement, râles.

TERMS USED IN DEFINITION OF "CURED"

18. *Ordinary Conditions of Life.*—This term as used implies that the patient is able to live in an environment where he is able to support himself without the assistance of others, or to live in his former surroundings and pursue his former occupation.

19. *Temperature.*—The best method and the best time to take the temperature is still unsettled. It should be recognized, however, that when no note is made of the fact, the oral temperature is indicated and that the temperature should not be taken for one-half to one hour after meals. The thermometer should be kept in the mouth, which has been kept closed for at least five to ten minutes, for five minutes to detect the slighter rises of temperature.

The "normal" temperature is still a mooted point, but far more is known in regard to the oral than the rectal temperature. The range for each patient varies somewhat, but it is unwise to consider any patient's disease "arrested" or "apparently cured" when the maximum temperature for three or more days averages over 99 F. Absorption from an old focus may cause rise of temperature when the disease is quiescent, but no one can separate such a condition from a slow advance of the disease, imperceptible by our present methods of examination. A rise for a single day to 99.5 F., or even higher, when some definite factor (coryza, tonsillitis, etc.) is unquestionably the cause, should be disregarded in making up the average on discharge. It would undoubtedly be wise to insist on a two-hourly temperature record were this possible, but in any case the temperature should be taken whenever possible after rest (that is, complete relaxation, mental and physical, in a sitting or reclining posture) for at least one hour. Quiet reading or conversation need not be forbidden some patients.

Under the definition of the physical signs of a healed lesion, it will be noted that a few râles at the base, probably atelectatic in origin, or a few râles following the expiratory cough are included. While it is true that this admits some degree of individual judgment into this definition, it is hardly wise to insist on the complete absence of fine râles before classifying a patient as apparently cured. It must, however, be recognized that the results on discharge from a sanatorium are of far less importance than those that relate to the ultimate results. It is much more difficult to exclude the individual standards of judgment in the former, while in the latter this can be much more readily done. As far as I am aware, there are only one or two sanatoriums in America where the expiratory cough is used systematically and the presence of râles excluded in this way. It will be noted that under the definition of "cured" no mention has been made of physical signs. This means that under this term there will be grouped a large number of patients in whom the disease becomes only permanently arrested, and, in fact, as Squire has remarked, an absolute cure can be determined only after death. These facts should be constantly borne in mind in connection with this classification. While I am of the opinion that it would be best to insist on the absence of all râles in any patient classified as apparently cured, still I do not feel that at present this can be insisted on.

Some have objected altogether to the use of the term "apparently cured" and believe that only "arrested" should be used. Classifications are chiefly of value in enabling distinctions to be made between definite classes, and while some patients with numerous râles may do as well as others without râles when both patients have

practically no symptoms, still a strong difference does exist between these two classes, and it should be noted in the classification on discharge. Again, a few hold that any patient with expectoration of any amount, no matter how slight, no matter whether tubercle bacilli have been absent from it on repeated examinations for months, should not be classified as apparently cured. This is not right, for a patient may have a slight hypersecretion of mucus from that part of his bronchial tree that has been seriously affected; and to state that for this reason he is not apparently cured seems manifestly unfair.

A number of interesting points arise in regard to the practical application of any classification. In the first place the question of time is exceedingly difficult to incorporate into any classification. For instance, it is doubtful whether a patient who has a few signs of infiltration above one clavicle and who has had symptoms for a year, should be placed in the same class with a patient with the same extent of physical signs, the same severity of symptoms, but whose history dates back for only one month. At the present time it does not seem practical to divide these patients into two classes. Another point that must be duly considered is the fact that a patient may apply for admission to a sanatorium and present signs and symptoms that would cause him to be classified among those in a moderately advanced stage. He may recover completely and lose symptoms and physical signs, but after a lapse of some months may apply for readmission, presenting signs and symptoms that would cause him to be classified among those in the incipient stage. In another instance a patient may spend some months in a sanatorium, but, not wishing to return to his home for one reason or another, may apply for admission into a second sanatorium. This patient, if he has improved considerably, would have to be reclassified on admission into the second sanatorium. These are points of practical interest which must be considered in connection with any classification. While they detract from the value of a classification, they do not seriously affect it when they are clearly borne in mind. The percentage of error is of little importance when it is allowed for.

METHODS OF PHYSICAL EXAMINATION

Any classification must necessarily depend in part on physical signs; and, as long as different examiners follow different methods of examination, the extent of the physical signs will vary and the usefulness of any classification intended for comparison will be greatly limited. To overcome this difficulty the patient should be stripped to the waist and râles should be said to be absent only when they are absent after the patient exhales, coughs at the end of exhalation and then takes a full, deep, fairly quick breath through his mouth. A stethoscope must be used for this examination.

STATISTICAL REPORTS OF SANATORIUMS

It is well recognized that without some definite system of classification it is impossible to compare accurately the reports from different sanatoriums, but the adoption of a uniform scheme for a classification is not sufficient. The sanatorium workers, in order to facilitate comparison of various results in different parts of the world, should adopt a uniform system of statistical report; and only in this way can the real effect of climate be estimated. The best statistical report is the one suggested by Turban with several modifications.

TABLE 1—TURBAN'S REPORT

No.	Condition.		Extent of Physical Signs (Turban). Both Lungs.	Each Lung.	Duration of Disease.	General Condition.	Digestion.	Range of Pulse 7 days on Admission, 2 days on Discharge.	Av. Max. Temp. 7 days on Admission, 2 days on Discharge.	T. B.			Complications.	Tuberculin. Variety. No. of Days and Doses. Highest Dose in Grams.
											Previous.	Residence.		
2473	On admission.	Mod. Adv.	I	R	24 months.	Favorable....	Unimpaired..	80-104	99.1	O	+	+	.....	B. F. 215 days 55 doses .030 gm.
	At discharge...	Arrested.	III	R^2L^2	32 months.	Favorable....	Unimpaired..	86- 92	98.7	+	....	....	.....	
2474	A	Incipient.	I	R	8 months.	Favorable....	Unimpaired..	70- 90	98.9	O	+	O		
	D	Ap. Cured	O		14 months.	Favorable....	Unimpaired .	76- 80	98.8	O				
2475	A	Mod. Adv.	I	L	3 months.	Unfavorable.	Unimpaired..	82-100	98.9	O	O	O	Tub.-arthritis ankle.	
	D	Ap. Cured	I	R	8 months.	Favorable.	Unimpaired..	88- 96	99.0	O				

TABLE 3— RESULTS OF SPUTUM EXAMINATIONS OF PATIENTS

Class.	Extent of Physical Signs According to Turban.	Treatment.	A R D +++	A R D ++O	A R D +OO	A R D O++	A R D OO+	A R D O+O	A R D OOO	P A R D +OOO
Incipient..	I	Without Tu.	.....	4=13%	4=13%	.....	.....	3=10%	15=48%	5=16%
Incipient..	I	With Tu.	5=22%	4=17%	1= 4%	.....	.....	1= 4%	9=39%	3=13%
Moderately advanced	I	Without Tu.	1= 9%	4=36%	1= 9%	.....	.....	.....	4=36%	1= 9%
Moderately advanced	I	With Tu.	4= 44%	3=33%	.....	.....	.....	.....	2=22%	
Moderately advanced	II	Without Tu.	6= 22%	6=22%	3=11%	3=11%	.....	1= 4%	6=22%	2= 7%
Moderately advanced	II	With Tu.	6= 37%	4=25%	3=19%	.....	1=6%	1= 6%	1= 6%	
Moderately advanced	III	Without Tu.	1= 14%	3=43%	2=29%	.....	.....	.....	1=14%	
Moderately advanced	III	With Tu	6= 60%	1=10%	.....	.....	.....	.....	1=10%	2=20%
Far advanced	III	With Tu.	1=100%							

NOTE.—O=Tubercle bacilli absent. +=Present. A=Admission. R=During Residence. D=On Discharge. P=Previous to Admission.

When T. B. were present on admission, no note is made with regard to previous examinations.

When T. B. were present previous to admission and also at any time during residence, they are marked as present on admission.

TABLE 2.—SUMMARY

Class.	Extent of Physical Signs According to Turban.	T. B. Found at Any Time.	Hygienic-dietetic Treatment Without Tuberculin. Patients who Stayed Over 90 Days. Average Residence, 200 Days.					Class.	Extent of Physical Signs According to Turban.	T. B. Found at Any Time.	Hygienic-dietetic Treatment With Tuberculin. Patients Who Took Tuberculin More Than 90 Days Average Residence, 250 Days.				
			Cases.	Appar. Cured.	Arrested.	Improved.	Progressive.	Died.								Died.
Incipient	I	O	15=30%	10=67%	4= 27%	1= 7%			Incipient	I	O	9=15%	5=56%	1= 11%	3=33%	
Incipient	I	+	16=31%	3=19%	12= 75%	1= 6%			Incipient	I	+	14=24%	4=29%	8= 57%	1= 7%	1= 7%	
Moderately advanced	I	O	4= 5%	1=25%	2= 50%	.....	1=25%		Moderately advanced	I	O	2= 3%	.....	2=100%	.....		
Moderately advanced	I	+	7= 9%	.....	7=100%				Moderately advanced	I	+	7=12%	.....	6= 86%	1=14%		
Moderately advanced	II	O	5= 7%	2=40%	2= 40%	1=20%			Moderately advanced	II	O	1= 2%	.....	1=100%			
Moderately advanced	II	+	22=29%	.....	13= 59%	5=23%	4=18%		Moderately advanced	II	+	15=25%	.....	11= 73%	3=20%	1= 7%	
Moderately advanced	III	O	2= 2%	.....	2=100%				Moderately advanced	III	O	1= 2%	.....	1=100%			
Moderately advanced	III	+	5= 7%	.....	5=100%				Moderately advanced	III	+	9=15%	.....	4= 44%	3=33%	2=22%	
Far advanced	III	+							Far advanced	III	+	1= 2%	.....	.....	1=100%		

There were also 15 patients who stayed less than 90 days. There were also 23 patients who took tuberculin for less than 90 days.
NOTE.—In this summary patients who had T. B. in the sputum previous to admission are counted as +, as well as those who had T. B. at any time during residence.

Every sanatorium should use this scheme for reporting its individual cases. It is shown in Table 1.

The scheme explains itself. It contains the condition of the patient on admission and discharge, the extent of the physical signs in each lung, as well as the presence or absence of the signs of cavity,[23] the duration of the disease, the general condition, the state of the digestion, the range of the pulse, the average maximum temperature, the presence or absence of tubercle bacilli on admission and discharge as well as previous to admission and during residence. The presence or absence of complications, and whether or not the patient has been subjected to tuberculin are also noted. The adoption of this tabulation will present clearly the facts from which the annual reports of the various sanatoriums are compiled. Few sanatoriums, however, up to this time have adopted a satisfactory summary of results of treatment. I devised some time ago the summary shown in Table 2.

This summary divides all patients into the three classes advised by the National Association for the Study and Prevention of Tuberculosis, and, further, each of these is subdivided into the different classes according to the extent of physical signs. Turban's classification has been used for this purpose, and attention is called to the fact that the three original classes, incipient, moderately advanced, and far advanced, have nothing in common with Turban's classification, which deals only with the extent of physical signs. Finally, each of these stages is divided again into two classes, according to whether the lesion has ever been open (tubercle bacilli present at any time) or has always been closed. This summary, it is believed, will remove the grounds for several criticisms of the classification adopted by the National Association. Both "moderately advanced" and "far advanced" classes are too broad, it is urged and rightly, and as much difference if not more exists within these groups than between them or between the "moderately advanced" and "incipient" classes. This summary divides the "moderately advanced" group into six divisions, all of which should be reported on separately. It also divides the "far advanced" group into two or more divisions.

The results of the sputum examinations recorded in most reports is also far from satisfactory, and the scheme shown in Table 3 is suggested. When tuberculin has not been used it is of course unnecessary to divide the patients into those who have and those who have not received tuberculin.

23. This datum can usually be indicated by a small c after R or L in the second column under the extent of physical signs.

Congenital Megacolon.—Gaujoux in the *Archives de Medecine des Enfants*, 1908, XI, p. 721, devotes fifteen pages to tabulation of the details of 62 cases of alleged Hirschsprung's disease, aiming to show that actual congenital, idiopathic megacolon is extremely rare, and that it must of necessity prove fatal soon after birth. In most cases presenting the Hirschsprung syndrome, the trouble is the result of undue length of the sigmoid flexure. As the child grows, the parts develop into more harmonious proportions and the anomaly becomes corrected. The tonicity of the anus sphincter should be tested, the capacity of the rectum investigated, the diet regulated and a systematic course of laxatives be instituted, to exclude all other causes before accepting congenital malformation as responsible for the symptoms observed.

TUBERCULOSIS IN PANAMA

INCIDENCE AND ASSOCIATION WITH PLEURAL ADHESIONS *

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Discussing the geographical distribution of tuberculosis, Baldwin, writing in Osler's "System of Modern Medicine," says: "The tropical countries furnish no statistics as to the frequency of tuberculosis, but it is said to be less common than in temperate regions, though more rapid in its course." He gives the percentages for temperate regions estimated by most pathologists, who usually regarded only gross appearances, as varying between 30 and 60 per cent., but thinks that probably the recent estimate of Harbitz of 50 to 70 per cent. for all ages represents an approximation of the truth.

While acting pathologist of the Board of Health Laboratory I examined 287 bodies with special reference to tuberculosis and pleural adhesions. Pleural thickenings, puckered cicatrices and adhesions were not classified as tuberculous lesions; calcified, caseous and fibrocaseous lesions and miliary tubercles were considered tuberculous. The diagnoses for the greater part were based on gross appearances, but sixty-eight lesions from twenty-five bodies were examined microscopically to control the gross diagnoses. Of twenty-four bodies considered tuberculous all but one proved to be so. The gross diagnosis was not correct in this body or else the very small tubercle was missed in preparing the section for microscopic examination. On the other hand, one body with doubtful lesions that were not accepted as tuberculous proved to be tuberculous. Of the sixty-eight lesions examined one other erroneous gross diagnosis was certainly made, the lesion being a miliary abscess of the spleen. This body, however, had other lesions that were microscopically tuberculous. It seems fair to assume, therefore, that the gross diagnoses of tuberculosis were approximately correct for the series, and I feel that whatever error there may be is on the side of conservatism.

FREQUENCY OF TUBERCULOSIS

Tuberculosis was present in 213, or 74.2 per cent., of the 287 bodies examined. This percentage is greater than the estimate of Harbitz and considerably greater than the estimates of most pathologists for temperate regions. In the following table is given the frequency with regard to nationality, age, color, sex, employment with the Canal Commission, and length of time on the Isthmus of Panama:

Of the bodies of patients who had come from tropical countries 73.6 per cent. were tuberculous. The greater frequency of tuberculosis among Jamaicans was probably due to the greater average age of the patients, 38.6 years. The average age of the Barbadians was well under 30 years. The frequency of tuberculosis did not appear to be affected by color, sex or employment with the Canal Commission. It was greater in those who had been on the Isthmus of Panama more than three months than in those who had lived on the Isthmus less than three months. After three months, residence on the isthmus bore no special relation to the frequency. The frequency varied directly, however, with the age of the patients, increasing with increasing age until the sixth decade. The group included between the sixth and ninth decades inclusive is small enough, however, to admit of error; likewise the group in the second decade.

TABLE 1. FREQUENCY OF TUBERCULOSIS IN PANAMA WITH RELATION TO NATIONALITY, AGE, COLOR, ETC.

Nationality (country.)	Autopsies. No.	—Tuberculous.— No.	Per Cent.
Tropical Countries—			
Barbadoes	84	56	66.7
Jamaica	52	44	84.6
Martinique	44	32	72.7
Other West India Islands	48	32	66.7
Colombia	13	11	84.6
Panama	7	7	100
Venezuela	1	1	100
Mexico	1	1	100
Total, tropical countries	250	184	73.6
Spain	16	13	81.3
United States	1	1	100
France	2	2	100
Italy	1	1	100
Finland	1	1	100
Sweden	1	0	0
Unclassified	15	11	73.3
Total	287	213	74.2
Age—			
Second decade	9	5	55.6
Third decade	111	75	67.6
Fourth decade	52	42	80.8
Fifth decade	41	35	85.4
Sixth-ninth decade	20	16	80.0
Unknown	54	40	74.1
Color—White	28	23	82.1
Colored	256	188	73.4
Not noted	3	2	66.7
Sex—Female	7	5	71.4
Male	280	208	74.3
I. C. C. employes	251	186	74.1
Non-employes	12	9	75
Unclassified	24	18	75
Time in Panama—			
Under one month	11	7	63.6
One-three months	48	33	68.8
Four-six months	45	38	84.4
Seven-eleven months	29	22	75.9
One-five years	52	38	73.1
Five-forty-four years	42	37	88.1
Unknown	60	38	63.3
Deaths from tuberculosis	287	21	7.3

Twenty-one deaths in 287, that is, 7.3 per cent., were due to tuberculosis. Percentages estimated for temperate regions, where more resistent white predominate, vary between 10 and 15.

NATURE OF THE LESIONS

A great majority of the lesions were calcified or well encapsulated and appeared to be healed or arrested foci. I can not venture to estimate the proportion of lesions that might have been considered progressive, though the number was relatively small. Cavity formation in the lungs occurred in twenty-four bodies and general miliary tuberculosis in thirteen. These figures include the bodies of those in whom death was due to tuberculosis.

LOCATION OF THE LESIONS

Left lung	73
Right lung	79
Left pleura	80
Right pleura	75
Left peribronchial lymph nodes	64
Right peribronchial lymph nodes	71
Pericardium	2
Extrathoracic lesions	36
Extrathoracic lesions only	3
Abdominal lymph glands	18
Abdominal lymph glands only	2
Intestines (ulceration)	14
Intestines (perforation)	1
Peritoneum (general)	4
Meninges	1
Heart (miliary tubercles)	1
Adrenals (miliary tubercles)	2

The spleen and liver were always involved in general miliary tuberculosis, and not infrequently with pulmonary tuberculosis a few miliary tubercles or caseous

*Read at the meeting of the Medical Society of the Isthmian Canal Zone, August, 1908.

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masses could be found. In one instance a large caseous mass about 4 cm. in diameter was present in the liver just at the anterior margin. The liver several times presented also tuberculous cavities from 2 mm. to 1 cm. in diameter with caseous walls and containing greenish-yellow semifluid material. A few miliary tubercles could usually be demonstrated in the kidneys in general miliary tuberculosis, though in three instances no tubercles could be found. In two of these three cases tubercle bacilli were found in the urine. Eleven of the eighteen instances of tuberculosis of the abdominal lymph glands were associated with general miliary tuberculosis and one with cavity formation in the lungs. In one body a chain of calcified lymph glands began in the retroperitoneal glands and extended upward into the thorax, including the hepatic, pancreatic, splenic and peribronchial nodes. There was only one small fibro-caseous nodule in the right lung. The pleuræ were usually involved with the lungs, the lesions being generally subpleural tubercles. The lungs and pleuræ were involved eighty-eight times without involvement of the peribronchial lymph nodes; the latter forty-six times without lesions of the lungs or pleuræ. The lungs and pleuræ showed lesions 163 times altogether; the peribronchial nodes 121 times.

PLEURAL ADHESIONS

There were adhesions between the visceral and parietal layers of the pleura or between the pleural reflections in the fissures in 187, or 65 + per cent., of the 287 bodies. The adhesions varied from delicate fibrous bands to total obliteration of both cavities. The right pleura alone showed adhesions 59 times, the left 40, both 88; that is, there were adhesions of the right 147 times, of the left 128 times.

TUBERCULOSIS AND PLEURAL ADHESIONS

Tuberculous lesions and pleural adhesions were associated in 165 bodies; that is, 77 + per cent. of the 213 tuberculous bodies showed pleural adhesions, and 88 + per cent. of those with adhesions were tuberculous. There were in the whole series 74 bodies with no tuberculous lesions, and among these were 22, or 29.7 per cent., with pleural adhesions. It must be assumed, then, that approximately 29.7 per cent., or 85, of the 287 bodies would have shown pleural adhesions had there been no tuberculosis. But there were 187 instances of adhesions. The difference, 102, or 54.5 per cent., of all bodies with adhesions, should represent approximately the number dependent on tuberculosis.

There are two sources of error in the above calculation:

1. It is conceivable, indeed, quite probable, that in the 63 tuberculous bodies that showed adhesions of supposedly non-tuberculous origin, adhesions of both tuberculous and non-tuberculous nature occurred. The adhesions in many bodies were extensive enough to admit of this conception. They were bilateral in 80 autopsies; one cavity was obliterated in 21, and both cavities in 9. This error, if it could be corrected, would increase the percentage of tuberculous adhesions.

2. It is probable that tuberculosis would have been found more frequently if more delicate methods of examination had been used, such as animal inoculation and microscopic examination of all adhesions and peribronchial lymph nodes. Correction of this error would increase also the percentage of tuberculous adhesions.

In view of these sources of error we must consider 54.5 per cent. a minimum for pleural adhesions of tuberculous origin in this series of autopsies.

The frequency of adhesions in the tuberculous bodies varied with the site of the tuberculous lesions in the thorax, as shown in the following tables:

TABLE 2.—FREQUENCY OF ADHESIONS AND SITE OF TUBERCULOUS LESIONS

Adhesions.	Tb. left.		Tb. right.		Tb. both sides.	
Left only	16	68.6%	5	71.2%	12	91.3%
Right only	17		22		9	
Both sides	13		25		42	
No adhesions	21		21		6	
Total	67		73		69	

TABLE 3.—FREQUENCY OF ADHESIONS AND SITE OF TUBERCULOUS LESIONS

	Tb. lungs (or pleuræ).	Tb. peribron. lymph nodes.	Tb. lungs (or pleuræ) and P. L. .
Adhesions	77 (85.5%)	27 (58.7%)	59 (80.8%)
No adhesions	13	19	14
Total	90	46	73

Tuberculosis on the right was associated with adhesions a little more often than tuberculosis on the left, and the adhesions were much more frequently on the tuberculous side. Tuberculosis on both sides was much more frequently associated with adhesions than when the lesions were on only one side, and in two-thirds of the bodies the adhesions were on both sides.

From Table 3 it is seen that tuberculosis of the lungs (or pleuræ) was associated with adhesions in over 20 per cent. more bodies than tuberculosis of the peribronchial lymph nodes only. When lesions were in the lymph nodes only there were adhesions in 58.7 per cent., while in non-tuberculous bodies adhesions occurred in only 29.7 per cent., or about one-half as often. This tends to show that, without gross involvement of lungs or pleuræ, a tuberculous pleuritis may arise simply from lesions of the lymph nodes. Since also in about forty bodies adhesions occurred at a distance from tuberculous lesions and even on the opposite side of the thorax, the idea suggests itself that the tuberculous virus may cause a pleuritis at a considerable distance from actual lesions.

In conclusion, from my study of tuberculosis at autopsy, I can not avoid the opinion that climatic and hygienic conditions in Panama are quite favorable for the arrest or cure of tuberculous infections, and my clinical experience also has supported this view.

SUMMARY

1. Tuberculous lesions were found in 74.2 per cent. of 287 consecutive autopsies.

2. A great majority of lesions were small focal ones and appeared to be healed or arrested.

3. Only twenty-one, or 7.3 per cent., of the 287 deaths were due to tuberculosis.

4. Pleural adhesions were present in 65 + per cent.

5. Of the pleural adhesions 54.5 per cent. was probably the minimum due to tuberculosis.

6. Adhesions occurred much more frequently when tuberculous lesions were on both sides of the thorax than when on one side only, and much more frequently also when the lungs (or the pleuræ) were involved than when the involvement was limited to the peribronchial lymph nodes.

My thanks are due to Col. W. C. Gorgas, chief sanitary officer, for permission to publish this paper.

THE CARE AND TREATMENT OF OPIUM-SMOKERS IN THE PHILIPPINES *

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In the early part of 1907 the Philippine Commission passed the opium law to regulate the sale and use of opium and its derivatives in the Philippine Islands. Before the enactment of this law the smoking of the drug and use of it by other methods was allowed under certain restrictions. The new law, however, put a rigid ban on the use of the drug in any manner, except when under the direct supervision of a registered physician. At the same time the law made the mere possession of the drug or the paraphernalia for its use, by one unqualified, a crime punishable by fine and imprisonment.

The authorities, recognizing the great amount of suffering and even danger to life which would result from the sudden withdrawal of the narcotic, passed an act by which funds were appropriated for the care and treatment of any habitué who would present himself or for those who were found by officers of the law to be using the drug and who desired hospital treatment in place of a term in prison. At the beginning the patients were cared for at San Juan de Dios Hospital, but later, on account of cramped quarters, they were transferred to the San Lazaro Hospital. When the transfer was made the new law went into full effect, and, therefore, many new cases were received at San Lazaro during the first few days that the work was taken over at that place, resulting in a total of two hundred cases, from which the facts and conclusions of this paper are drawn.

In reviewing the results obtained in treating the drug habit two separate classes of cures can be considered. The first class is that in which the habitué is, after treatment, discharged physically and mentally normal. He eats well, sleeps well, assimilates his food properly, has no longing or desire for opium, and has gone sufficiently long without the drug to demonstrate to him that its use is not necessary for the continuance of his life, happiness and well-being. The second class of cures is that in which all the results of the first are accomplished and, in addition, the desire for opium is eliminated for the future. Examples of this class are, I believe, seldom, if ever, fully realized. The man who has once been addicted to the use of the drug will, after discontinuing its use, almost certainly at some future time encounter unpleasant conditions or circumstances that will bring back to his mind the realization of the immediate relief and freedom the drug can give him. At such a time the man's own inherent strength of will is all that keeps him from returning to his old habits.

PLAN OF TREATMENT AT SAN LAZARO

By the treatment as instituted at San Lazaro the results described in the first class are the only ones we hoped to accomplish or claim to have achieved. In caring for the patients a series of three wards was arranged. Ward 1 was the receiving ward, and here the patients were first assigned on entering the hospital. A careful examination of the patient's physical condition was first made, a bath was given him, he was carefully searched for any concealed opium, and was questioned through an interpreter as to the amount of opium or morphin he had been accustomed to take, his method of administering it and the length of time that he had been using it. He was kept in this ward, where he was always under close observation of trained male nurses, as long as he was receiving opium or sedatives in any form and as long as his physical condition demanded attention.

Ward 2 might be called the hospital ward, for it was here that all patients were sent on development of serious symptoms or intercurrent diseases. This ward was under the care of graduate female nurses, and the patients here received close attention as to diet, nursing, etc.

Ward 3 may be classed as the convalescent ward. When a patient arrived at that stage at which he was no longer receiving any opium, when his sleep was undisturbed without the use of sedatives, when all gastro-intestinal symptoms had disappeared and his appetite had regained its natural tone—in other words, when he seemed to have returned to a normal state, both physically and mentally, he was removed to this ward. No opiates of any kind were given here, and if a patient should develop symptoms calling for the administration of his favorite drug he was first returned to Ward 1 before same was given. Briefly, this ward was a sort of detention station in which the apparently cured patients were confined under observation awaiting dismissal. The only treatment given here was a one-dram dose of the elixir of iron, quinin and strychnin after meals. In regard to the time the patients should be held in this ward after the opium had been discontinued, it was finally decided to make a general rule calling for ten days' detention, provided the patient's physical condition was all right on the expiration of this period.

By this plan the patients were continuously separated into three classes: first, those dangerously ill and requiring close medical attention; second, those steadily recovering from the use of the drug and requiring less attention; and, finally, a class receiving no opium or specific treatment whatever.

PATIENTS

As to the nationality of the patients treated, 197 were Chinamen and 3 were Filipinos. All were of the male sex. Their ages were from 17 to 63 years, with an average of 35 1/3 years. The length of time in which they had been habitués of the drug was from six months to thirty-three years, with an average of seven and one-half years. This average, subtracted from the first average, shows that the average age at which they became addicted to the habit was 27 5/6 years.

A very interesting fact which developed while ascertaining the most popular method of self-administration was the great number who were found to use the hypodermic syringe. Our usual mind-picture of the Chinese opium-fiend is one in which he is reclining on a couch with his alcohol lamp and crude opium in front of him, his pipe in his mouth, and surrounded by the reeking smoke of the burning opium. This picture has, however, to a great extent become a thing of the past. Although the Chinaman may have been slow in accepting most of the new ideas and inventions of the Occident, he has very quickly seen the true worth of the hypodermic syringe and its great advantages over the old opium-pipe. In it he has an instrument whose action is swift and sure. It was found that 29 per cent. of our patients at San Lazaro had used the drug in this manner. On close questioning, however, it developed that all but two or three had got their first taste of the effects of the juice of the poppy by the smoking method. The smallest number was those whose favorite method was the eating of the drug, the percentage of those who used it in this

* Read before the Manila Medical Society, Aug. 10, 1908.

manner being 19. They also gave, almost to a man, the history of having first used the pipe.

As to the amounts taken by the habitués I can not vouch for the accuracy of the figures, for it was a matter of great difficulty to gain these facts. However, they are just as obtained through an expert interpreter, and are given as stated:

Greatest amount of opium smoked per day	30	gm.
Least amount of opium smoked per day	2	gm.
Average amount of opium smoked per day	11.25	gm.
Greatest amount of opium eaten per day	17	gm.
Least amount of opium eaten per day	1	gm.
Average amount of opium eaten per day	6.5	gm.
Greatest amount of morphin, by hypodermic, per day	7	gm.
Least amount of morphin, by hypodermic, per day	0.5	gm.
Average amount of morphin, by hypodermic, per day	3.75	gm.

One of the most interesting and surprising facts discovered in examining the new patients as admitted was the good physical condition of those who took the drug by the smoking method. Many of them, although giving the history of having been opium-smokers for from five to ten years, were really of almost robust physique and had been doing hard manual labor every day up to that of entrance into the hospital. In direct contrast to them were the users of the hypodermic syringe. These men were usually greatly emaciated, with sunken eyes, a haggard expression and a muddy skin. In fact, they made up such a decidedly different class, that after a few days' experience I could usually tell a new patient's method of taking the drug by merely observing his physical appearance.

OPIUM-SMOKERS

No specific antidote or substitute treatment was used for opium-smokers. The patient was usually received at the hospital some time in the morning, and until evening he received no medication. About 7 in the evening he was generally found to be in about the same condition as on entrance except for a certain nervousness and an appearance of acute apprehension. At this time the usual patient was given one or two grains of opium in pill form, or one-half grain of morphin by hypodermic. This amount of the narcotic would in most cases insure a fairly good night. In the morning, however, his real troubles began. The first and most troublesome symptom to appear was the gastric and abdominal pain, accompanied by nausea and vomiting. In spite of many different drugs tried, these symptoms continued for from two to five days, almost without abatement, except at the periods when opium was administered. The prescription which seemed to possess the most virtue in relieving these symptoms was one of capsicum, tincture of gentian, and nux vomica. It is only fair to say, however, that the relief gained was very slight and of fleeting character.

There was a surprisingly small amount of diarrhea encountered while treating these patients. In only about 2 per cent. of the cases were the diarrhea symptoms at all alarming; in about 25 per cent. there was slight diarrhea of from three to five stools per day. A great many patients had normal stools throughout the treatment and a few patients were constipated from the time of entering the hospital until dismissal. The diarrhea in those cases which became at all alarming was usually quickly and easily kept under control by the careful gradation of the diminishing doses of opium. Large doses of bismuth subnitrate were found to be of some value, but opium itself, judiciously administered, was the most efficacious, and finally came to be the only treatment used.

Next in severity to the gastrointestinal symptoms were those referable to the nervous system. They were expressed by extreme restlessness, slight delirium and insomnia. In attempting to alleviate these symptoms sulphonal, trional and hyoscin were successively tried, but without any encouraging results being noted. Bromids of sodium and potassium were finally the drugs found to be of most value, and were given in large doses of from forty to fifty grains, usually once in twenty-four hours, about 7 in the evening. This gave the patient some help through the night, during which time he would obtain some rest and recuperation from his day's suffering. As it was absolutely necessary that the habitué, in order to be cured, must pass through a certain amount of suffering, this plan aimed at having the most of it, if possible, occur during the day, at which time it is much easier to bear pain and discomfort. However, the patient's first three or four nights were generally very restless and little sleep was secured. For these first few days he was usually unable to eat anything, but possibly drank some milk, or took small amounts of broth. During this period he received probably three or four grains of opium, or three-quarters to one grain of morphin in each twenty-four hours, the drug being given when it was thought to be needed and not at any stated intervals.

In about 10 per cent. of the cases, symptoms of collapse were noted at times during these first three or four days. These symptoms came on rapidly and were most apparent through the respiration becoming fast and shallow, the pulse rapid and weak, and the pupils of the eyes dilated. The drug *par excellence* for this condition is strychnin, used hypodermically, in doses of from one-twentieth to one-thirtieth of a grain, repeated if reaction is not quickly brought about by the first injection.

On about the third or fourth day the usual patient began to show signs of improvement. His abdominal pains lessened, his appetite began to be heard from, and his recovery from that time on was rapid. The amount of opium or morphin given him was rapidly reduced, until at the end of a week from the time of his admission to the hospital it had in most cases been entirely discontinued. Soon after this, he would be transferred to Ward 3, where he would spend ten days in sleep and in gorging himself with food at a rate that made the per capita expense account soar; for, during this period, which might be called convalescence, without exception each patient developed a phenomenal appetite.

To sum up, the points of interest developed during the treatment of this series of cases of opium-smokers were: First, the rapid withdrawal of opium from the habitual Chinese opium-smoker is attended with very little danger and a surprisingly small amount of suffering. Second, in a comparatively short time his system regulates itself to carry out its functions without the aid of the narcotic. Third, the constipating effect of opium when taken into the system by smoking is not great, for its withdrawal after long use by this method is attended by very little diarrhea. Fourth, the deteriorating effects of long continued opium-smoking on the physique of the Asiatic is of no alarming importance. In fact, I believe that it results in less injury to the physical welfare of the Asiatic than does the continued use of alcohol, when taken by the Caucasian. It must be borne in mind, however, that the above assertions refer only to the Chinaman who *smokes* opium.

THE USERS OF OPIUM BY INJECTION

In regard to the patients treated who used morphin hypodermically, or opium by mouth, there is very little to say. They were by far harder to treat than the smokers, and their treatment presented no ideas other than those which have been reported in the past. They were gradually reduced in their daily dose and treated symptomatically. Only one matter of interest occurred during the treatment of these patients, and that was the results of our experimenting with the hyoscin substitution treatment. Fifteen patients who used morphin hypodermically were picked out for the experiment, and at 7 o'clock one evening were each given one-quarter of a grain of morphin and one one-hundredth of a grain of hyoscin. This first night the result seemed to be fairly good. The second evening the procedure was repeated, but not so successfully. Some of the patients were very restless all night, others seemed to be dazed, and four were delirious. Despite these facts, however, the dose was again repeated on the third night. Within fifteen minutes after the administration of the hyoscin, one-half of the patients had developed a wild, talkative delirium, wandering about the ward if not held in bed, absolutely oblivious to their surroundings, not recognizing their friends or hearing or heeding what was said to them. Of the remaining patients only two were entirely unaffected; two developed the most violent gastric symptoms, expressed by excruciating pains in the stomach and abdomen and most violent retching and vomiting; the breathing apparatus of one was so disarranged as to require artificial respiration; the rest suffered cardiac collapse with pulse that could hardly be felt at the wrist, one being affected to such an extent that I felt for a time that dissolution was imminent. Whether or not these demonstrations were due to an accumulative action of the hyoscin, to an idiosyncrasy for the drug which the Chinaman may possess, or what it was, it is sufficient to say that no more hyoscin was used on these patients, and I most thoroughly condemn its use as a substitute for morphin in treating this class of patients.

OBSERVATIONS ON CHOKED DISC

WITH ESPECIAL REFERENCE TO DECOMPRESSIVE CRANIAL OPERATIONS *

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During the past four years we have been occupied with some experimental and clinical studies on the relationship between various intracranial processes and choked disc.[1]

Our clinical experience is the outcome of studies made for the most part in the wards of the Johns Hopkins Hospital on about two hundred cases of brain tumor. In addition to these tumor cases there has been an equally large number of examples of what we regard as choked disc occurring in such diverse conditions as apoplexy, cerebral thrombosis and embolism, hemorrhage at birth, meningitis, hydrocephalus, nephritis, acute operative compression, postoperative edema, and the cerebral edemas which have accompanied cerebral contusion in cases of cranial injury. Unquestionably our experiences of greatest value have been acquired through the consecutive study of the often rapid alterations in the eyegrounds which usually follow the diminution of intracranial tension brought about through decompressive measures.

Our experimental investigations, undertaken in the Hunterian Laboratory, though still in progress, nevertheless suffice to justify the statement that through mechanical means alone we can not only produce an acute neuroretinal edema which will rapidly subside, but by a long-continued pressure can bring about a more lasting swelling of the nerve head possessing the histologic features which characterize this lesion in clinical cases.

It is our intention on this occasion, after a brief review of the present theories, to present merely a general statement of our views in regard to the etiology of the process, reserving for a future time a more explicit description of the experimental work; of the retinal changes which occur in tumor cases after decompression; of the relation between so-called albuminuric retinitis and choked disc; and of the effect of choking on the visual fields for form and color.

SUMMARY OF VIEWS CONCERNING THE ETIOLOGY OF CHOKED DISC

Though the matter had been hinted at by Türck in 1853, Albrecht von Graefe seven years later was the first to fix the attention of the medical world on the relationship between encephalic disease and the remarkable changes in the eyegrounds—called by him *Stauungspapille*—which are disclosed by the ophthalmoscope. He was the first to offer an explanation of the phenomenon, albeit his conjecture that the process is attributable to a venous stasis brought about by compression of the cavernous sinus never received wide acceptance. It was opposed, for example, by Sesemann (1869) on the ground that the free anastomoses between the facial and orbital veins would prevent any such vascular stasis, and, indeed, was abandoned by von Graefe himself before his death.

The first opportunity for a reasonable explanation of the process was offered in 1869 through Schwalbe's important discovery of the intercommunication between the subvaginal space of the optic nerve and the intracranial meninges. Thus, independently of one another, Manz and Schmidt-Rimpler, as the result of the injection experiments, showed that fluid could be made to pass from the intracranial chamber into the sheath of Schwalbe, leading to a hydrops vaginalis with ampulla-

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1. *Nomenclature.* We have chosen Clifford Albutt's term "choked disc" as a designation of all grades of the neuroretinal edema and its consequences which occur in association with states of intracranial tension, realizing that some are still inclined to accept von Graefe's division and to distinguish a condition of "optic neuritis" with its low grade of swelling from the so-called "choked disc" when the edema of the papilla reaches a distinctly measurable height—of 2 D. according to Elschnig. With the feeling that the terms "neuritis" or "papillitis" give an erroneous impression of the process, we have abandoned these designations altogether.

Though in the 3d edition of Gower's classical Medical Ophthalmoscopy (1890) the author, in collaboration with Mr. Marcus Gunn, evidently adheres to the inflammatory theories and though Mr. Gunn in his most recent discussion of the process (Brit. Med. Jour., Oct. 26, 1908, p. 1126) has apparently been largely won over to the view of its mechanical nature, he nevertheless suggests the term "tumor-papillitis" for the lesion when occasioned by a new growth.

The German *Stauungspapille*—which "choked disc" does not quite translate—is preferable to this, and George E. de Schweinitz has called our attention to Herbert Parsons' suggestion that *Papillædema*, a term introduced by Elschnig, be used, and we agree that it is the best designation as yet offered, provided it is recognized as including all stages of the process.

like distention of its distal end; and though appearances of inflammation might supervene in the course of time they attributed the chief rôle to the mechanical pressure of the distended sheath which led to an incarceration of the retinal end of the nerve with resultant edema of the disc.

This *Transporttheorie* of Schmidt and Manz met with opposition as well as support on the part of subsequent observers. It led in 1873 to von Wecker's suggestion that the sheath of the opticus should be opened in the treatment of choked disc and the strangulated scleral ring divided. Loring, in 1875, opposed the theory, while Panas a year later, as a result of the study of traumatic cases, upheld it. Hughlings Jackson was the first to report cases of tumor without choked disc, and it was difficult to reconcile this finding with the *Transporttheorie*.

Parinaud (1879) regarded an internal hydrocephalus, whether with meningitis or tumor, as essential to the appearance of choked disc. He asserted that an edema of the brain, which extended to the optic nerve, accompanied the ventricular hydrops, and he was unable, in rabbits, by simple intracranial injection of fluid, to produce a *Stauungspapille*. His views of a spreading cerebral edema have been upheld by Ulrich (1885), Siebricht (1902) and Kampherstein (1904).

In 1881, before the International Congress in London, the inflammatory theory was propounded by von Leber, and the term "papillitis" has since been prevalent in English writings. He thought that in no stage of the process was there a true edema or venous stasis, but that it was due to some toxic irritant which found its way through the cerebrospinal fluid to the nerve-head by way of the vaginal sheath. It was therefore a matter of quality rather than tension or quantity of fluid. This view of a toxic neuroretinitis was strongly upheld in a series of papers by Deutschmann, a pupil of von Leber. Similarly, Galezowski, Brailey, Edmonds, and many others, have expressed the belief that in tumors there is an irritant toxin in the cerebral tissue itself which finds its way to the disc down the optic nerve.

Thus toxic or inflammatory, as opposed to mechanical theories, have up to the present day been the most strongly entrenched views, although other bizarre hypotheses have been offered by a number of writers. Among these may be mentioned Loring (1882), who proposed a view of trigeminal irritation with disturbances of trophic function; Ulrich (1887), who attributed the process to compression of the central vessels of the opticus resulting from an interstitial edema of the brain and nerve (Parinaud), a view supported by Deyl von Grosz, Yamaguchi, and others; Adamkiewicz, who regarded it as a neuroparalytic inflammation of the optic nerve centers and who asserts (1905) that artificial increase of pressure in the skull never leads to a *Stauungspapille*, but only to a stasis of the chorioidal veins; Benedikt (1868), Schweller and Hughlings Jackson, who ascribed the process to a reflex stimulation of the vasomotor nerves of the disc leading to inflammation.

The *mechanical* or Schmidt-Manz theory has received support from the experiments of Schultén, from Bramwell, from Oppenheim, from Hoche,[2] from Merz (1900); and as a result of observation[3] on the retrocession of choked disc after palliative operations by Sänger, Axenfeld, von Bruns, Paton, and a host of other recent observers.

The *inflammatory* or Leber-Deutschmann view has been upheld by Knies; by Gowers, who believes in a descending neuritis; by Elschnig, whose view (1895) that choked disc arises in consequence of inflammation, never from a pure edema, is upheld in 1901 when he adds that an increase of intracranial pressure can never be the cause: by Jacobsohn (1897): by Fleming (1904), who regards the nuclear increase as a certain evidence of inflammation; and by many others[3].

Two things, it seems to us, have added immensely to our knowledge of choked disc: one the electric opthalmoscope, which makes the routine examination of ill or recumbent patients a matter of ease, and the other the decompression operation, which has of necessity modified the views of many who heretofore have clung to the inflammatory theory of von Leber. Misconceptions as to the nature of the process are lamentable for the very reason that the matter rests in its chief import on a therapeutic basis. This is illustrated by the following quotation from a paper published in 1906 by a leading American neurologist:

> The toxic factor in the production of neuritis has long been recognized and it is believed by many to be of importance in the production of headache, mental disturbances and other symptoms. Relief of pressure will, therefore, have little influence on any symptoms of toxic origin.

If our observations will modify, if not completely alter, views such as this, they will serve the purpose for which they are here set down—namely, to accentuate the importance of the mechanical factors. After all, it is possibly a mere quibble, for the physiologic chemist may claim that behind all edema there is some toxic element, and the pathologist, likewise, that the round-celled infiltration which appears sooner or later with new-formed tissue, leading to shrinkage and atrophy, indicates inflammation; but in spite of this it is the mechanical element producing edema which underlies these changes, and hence they demand a mechanical therapy. It is analogous to the effects of a tourniquet loosely applied about an extremity, which leads first to edema but in the course of time to infiltration, thickening and contraction of the tissues: on removal of the tourniquet the process will completely subside unless the induration has advanced to the stage of permanent scar-tissue formation.

EXPERIMENTAL OBSERVATIONS

In agreement with the experiences of Schwalbe, Manz and others, it was noted by one of us some years ago, while engaged in experimental observations on cerebral compression, that when fluid is allowed to enter the subdural space through a canula accurately screwed into a small trephine opening in the skull, a swelling of the optic discs will occur. The degree of tension necessary to induce this acute edema may be measured by inserting a mercurial manometer in the inlet tube between the pressure flask and the canula.

2. Hoche drew the interesting analogy between choked disc and compression myelitis of the cord which, as demonstrated by Schmaus, is not an inflammatory process but the result of a simple *Stauungsoedema*

3. Excellent summaries in regard to the causation of choked disc have been given by Th. Kocher in Nothnagel's Specielle Pathologie und Therapie, 1901, ix, 206, and by Alfred Saenger in the Wiener med. Wchnschr., 1904, No. 47. Gower's Medical Ophthalmoscopy, of course, remains to this day the best monograph in English on this and allied subjects. References to the more important recent papers accompany Elschnig's chapter in Flatau, Jacobsohn and Minor's Handbuch der pathologischen Anatomie des Nervensystems, Berlin, 1904, ii, 1165.

When the fluid is allowed to enter the cranial chamber under a pressure in excess of venous pressure, venous engorgement will be apparent in the retinal veins, and soon a measurable elevation in the optic discs can be observed. If, by elevating the flask, the pressure is increased so as to nearly equal the normal arterial pressure there will result a marked engorgement and tortuosity of the veins with a high grade of swelling in the disc. Under these circumstances, if the optic nerve is exposed by a free opening of the orbit a marked distention of the vaginal sheath with the well-known ampulla-like dilatation of its distal end will be disclosed. If the fluid through which pressure is being made is colored the color rapidly makes its appearance under the sheath of the nerve.

In order to determine whether the retinal edema was a consequence of this fluid in the nerve-sheath under increased tension or whether it was due in part also to a stasis of the retinal veins, in certain experiments the nerve-sheath was ligated distal to the chiasm with sufficient pressure to obstruct the venous return without interrupting the circulation through the retinal arteries. Under these conditions, though the retinal veins became tortuous and engorged, no appreciable swelling took place in the disc. On the other hand, with removal of the ligature and the exertion of sufficient pressure on a portion of the dura exposed by a trephine opening over the hemisphere, the ampullated distention of the subvaginal space would quickly occur, and the disc promptly become edematous.

In brief, therefore, through the backing up of fluid under pressure—and it is indifferent whether this fluid be artificially introduced or be merely the normal fluid which has been crowded from the subarachnoid space into the vaginal sheath—a neuroretinal edema will occur, whereas venous stasis alone will not produce it.

These transient edemas are naturally difficult of histologic demonstration, inasmuch as the fluid is abstracted from the tissues in the early process of fixation. We have, however, been able, by a long continuation of pressure in an animal possessing a large subtemporal, healed, cranial defect, to reproduce the typical permanent lesion of a long-standing choked disc, with hemorrhages, round-celled infiltration and all, which was not only demonstrable with the ophthalmoscope, but which has later shown the usual histologic picture.

Animals may exhibit different changes in the discs, even under the same degree of fluid pressure: indeed, both discs of the same animal are seldom affected in like degree. It has been our experience, furthermore, that when choked disc has been experimentally induced in this way the edema first makes its appearance in the eye contralateral to the hemisphere over which the fluid is being introduced.

Our efforts to produce choked discs through the introduction of foreign bodies, with encroachment on the intracranial space after the manner of a tumor, have so far met with only a certain measure of success, doubtless owing to imperfect methods. Such a degree of swelling of the nerve-head as we have occasioned in this way has been much slower in making its appearance, has been less pronounced than when fluid was used, and rarely holds for any length of time. In these cases the disc in which swelling was first observed corresponds to the hemisphere in which, or over which, the foreign body had been introduced and thus was homolateral to the lesion.

We feel justified in the conclusion that a simple increase of intracranial pressure without any inflammatory or toxic reaction is capable of producing a typical choked disc.

CLINICAL OBSERVATIONS

Operative and Postoperative Edemas.—In the older methods employed for the removal of the Gasserian ganglion some considerable elevation of the temporal lobe, with resultant local cerebral compression, was necessary for a satisfactory exposure of this structure. In consequence of this temporary compression, a low grade of choked disc was not infrequently found after the operation in a considerable number of patients who were made the object of study a few years ago. In one patient there was a marked choking on the side of the operation, with retinal hemorrhages. The changes were often found immediately after the operation, and in a few cases lasted for several days before they disappeared completely. In no case was there any permanent damage either to the nerve or retina.

According to the method which we now use in approaching the ganglion we have failed to find any evidences of these changes, doubtless owing to the fact that with the present operative procedure but little elevation is needed in comparison with the earlier measures and because the pressure, such as it is, is continued for a comparatively short time. It is natural to suppose that the neuroretinal edema occurring in these patients corresponds with the condition induced experimentally by pressure on an area of exposed dura, the normal cerebrospinal fluid being crowded by the pressure into the adjoining optic sheath. Naturally the choking will not occur when there is a considerable escape of fluid during the course of the operation.

A postoperative choked disc has been seen in a number of cases when, after an exploratory osteoplastic craniotomy, there has been a subsequent extravasation of blood leading to an extradural clot. Also in cases of tumor extirpation, when there has been considerable cerebral contusion with resultant edema and swelling of the brain, the height of a pre-existing choked disc may be increased.

Choked Disc in the Newborn.—The fact has long been recorded that after difficult instrumental deliveries a choked disc, often with retinal hemorrhages, may be found in the newborn infant. This we have been able to verify. We have not only observed the condition in infants after prolonged and difficult labor, but also have ample proof that compression of the skull in supposedly uneventful deliveries is at times sufficient to elevate the discs to a height of from 5 to 6 D. In all infants in whom choked discs have been found, tense fontanelles have been the rule.

Cranial Injuries in the Adult.—It has been our good fortune to observe many examples of injury to the skull associated with edema of the papilla, and, indeed, it is the rule for a choked disc sooner or later to accompany at least all bursting (basal) fractures. The choking may appear early, a matter of a few hours, in case there has been extensive contusion or extravasation of blood, or it may appear late, a matter often of a few days, when the edema of concussion is at its height.

It consequently has been possible for us in many cases to study the eyegrounds before there was any evidence of swelling, and it has been interesting in these cases, since decompression has become a routine treatment for them, to compare the ophthalmoscopic

findings with the degree of tension disclosed at operation. Thus, no case in which choked disc was present failed to show increased intracranial pressure: cases in the absence of choked disc, with possibly one or two exceptions, invariably disclosed a brain and cerebrospinal fluid not under unusual tension.[4] Many illustrative records might be cited—two will suffice.

CASE 1.—Forty hours after a basilar fracture of the skull a patient was brought to the hospital. During the next two days, despite the apparent improvement in his general condition, the choked discs, which were present on admission, gradually increased in height, and for this reason a decompressive exploration was deemed advisable. A large amount of bloody cerebrospinal fluid, holding numerous small clots, spurted from beneath the dura when the tense membrane was opened. A temporary subtemporal drain was placed with escape of fluid for a few days. The patient's choked disc quickly subsided and his recovery was rapid.

CASE 2.—A workman fell from a height on the back of his head. There was profound loss of consciousness with development of marked rigidity in the extremities. The discs were normal and there were no pressure phenomena. Nevertheless an exploratory decompression was performed, exposing dura and brain, which were not tense. The patient died after a few days, with symptoms resembling those of a decerebrate animal. Autopsy disclosed no lesion other than two small symmetrically placed pontine hemorrhages.

Meningitis.—Contrary to the statement handed on in many neurologic and ophthalmologic text-books, we have found that in uncomplicated meningitis choked disc is rare—a matter that speaks emphatically against the view of an inflammatory origin of the process. Others have made similar observations in regard to the infrequency of von Graefe's so-called descending neuritis.

When an internal obstructive hydrocephalus complicates the late stages of meningitis, however, choked disc is almost inevitable. We are inclined to regard its appearance as one of the most useful clinical signs of this complication.

Ventricular punctures have been performed in a number of these patients—oftentimes repeated punctures. On occasion the puncture has been made while the eyegrounds have been under continuous observation, and the subsidence of the vascular congestion, and, not infrequently of the swelling itself, is most striking.[5] With reaccumulation of the fluid the original condition becomes restored.

Choked disc is rare in cases of pyogenic abscess, doubtless because brain is destroyed by the process rather than pressed on. Hence unless there is considerable local edema in consequence of the focus of suppuration there is not likely to be any considerable increase of tension. It is otherwise, however, with tuberculous abscesses, but their symptomatology so closely resembles that of tumors that they will be considered together under the latter heading.

Nephritis.—We are more and more inclined to the view of Bramwell, Russell and others that the headache, vomiting and so-called "albuminuric retinitis"—in other words, the cerebral pressure symptoms of renal disease—are due, in large part at least, to a cerebral edema. Histologic studies of the neuroretinal lesion in nephritis have furthermore served to strengthen the opinion drawn from clinical observations that the lesion accompanying nephritis is merely a modified form of choked disc.

That a retinal picture typical of that characterizing renal disease may occur in association with tumors, particularly those below the tentorium, has long been recognized and has received the authoritative confirmation of Taylor, Gunn, Paton and de Schweinitz.

Eighteen of our 200 cases of tumor showed the typical so-called stellate figures of albuminuric retinitis. In twelve of them there was no clinical suspicion of any renal involvement, and, furthermore, relief of the intracranial pressure, through decompression, in a number of the remaining cases led to a disappearance from the urine of the suggestive renal elements. For example:

A young girl was under observation, owing to headaches and slight choking of the discs. Albumin and a few casts were present in the urine. This condition remained unchanged for a number of weeks; when a convulsion occurred, and it seemed inexpedient to postpone the contemplated decompression longer. At the operation a marked increase of cerebral tension was found; the choked discs rapidly subsided and the albumin and renal elements disappeared from the urine before the patient's departure from the hospital.

On the other hand, in not a few patients whom we have studied in the medical wards a postmortem examination has disclosed advanced renal disease, with a normal though possibly edematous cerebrum, whereas, clinically, definite choked discs had been present with none of the signs which are supposed to characterize nephritic retinitis.

In a number of patients with nephritis we have performed lumbar punctures while the eyegrounds were being observed. When pressure symptoms are present we have invariably found the fluid to be under increased tension, rising occasionally from 60 to 80 cm. or more in the manometer tube. Its withdrawal leads usually to a temporary amelioration in the patient's subjective symptoms and to an improved appearance in the eyegrounds. Unless the neuroretinal condition is far advanced in new tissue formation, a straightening of the vessels and a measurable lessening of the edema can sometimes be observed within a very short period. With the almost inevitable reaccumulation of fluid, the former appearances usually soon return. That this is not always the case, however, is evidenced by the two following histories:

CASE 1.—Two days after parturition, eclamptic convulsions with all the symptoms of cerebral compression developed in a young woman who had suffered for some years with chronic interstitial nephritis. The fundi showed the typical changes of "albuminuric retinitis." An excess of fluid was evacuated by lumbar puncture; the convulsions ceased, and in the course of a few hours her condition had greatly improved. In less than a week there was a marked change in the fundi. After three weeks not a trace of the "retinitis" could be found, and now, a year after the operation, she continues in good health and her eyes show nothing pathologic.

CASE 2.—In a patient with uremic symptoms who showed the typical, so-called "nephritic retinitis," a subtemporal decompression was performed. This disclosed a very tense dura, on opening which an abundance of fluid was evacuated. Our hope that the cranio-dural defect would obviate the return of the former degree of pressure was well grounded, for the patient's uremic symptoms entirely disappeared and there was a rapid subsidence of the extreme swelling of disc and retina, with a most striking change in the appearance of the fundi. The renal condition, of course, remained unaltered.[6]

4. It is true of these operative and traumatic cases, just as in cases of brain tumor, that the swelling involves the discs first on the nasal side and last on the temporal; whereas in clearing the process takes place in an inverse order, the temporal edge coming into view first, while the edema lingers on the nasal side.

5. One of our earlier experiences of the sort was recorded in an article entitled The Blood pressure Reaction of Acute Cerebral Compression, Am. Jour. Med. Sc., June, 1903.

6. This matter of choked disc and albuminuric retinitis, with the detailed report of this latter case, has been made the subject of another communication (Am. Jour. Med. Sc., October, 1908).

Cerebral Tumor.—In our large series of brain-tumor cases we have been fortunate enough to see a number of patients before any injection or edema of the discs has become apparent, and we have thus been privileged to observe the early stages of the so-called "neuroretinitis" while the patients were awaiting operation, as well as the prompt subsidence of the condition after decompression. Indeed, in doubtful cases (cerebral syphilis, embolism, etc.), the question of operation in the medical wards has come to hinge, not on the patient's subjective improvement or on the change in general symptoms so much as on whether or not there is an alteration for the better in the eyegrounds. It may be said that we have seen no appearances in the discs of these patients that were not manifest in the conditions, clinical or experimental, which we have already cited—in other words, no appearances peculiar to tumor.

We have been unable in our study of the eyegrounds to discover anything of value in determining the size or structure of a tumor. Small benign growths in some situations will, by a mechanical effect, increase the intracranial pressure more than large, malignant, infiltrating ones placed elsewhere. Further, as de Schweinitz has emphasized, the stage of the retinal process is no indication of the duration of the cerebral lesion, nor can we predict in a case of tumor in the absence of choked disc when this is likely to occur. We have seen a sudden choking take place in a patient with a cerebello-pontile tumor known to have been present with no retinal change for eight years; and of course it is a frequent experience to have the first suspicion of a brain tumor arise in consequence of the accidental discovery of a choked disc. The whole question resolves itself into the study of the character of the intracranial pressure and its effect on the cerebrospinal circulation, regardless of the histology, the situation, or the duration of the neoplasm.

A growth may increase the intracranial tension in such fashion as to cause a backing up of cerebrospinal fluid in the optic sheaths in two principal ways, namely, with or without the intermediation of an accompanying internal hydrocephalus.

A tumor so situated as to produce an obstructive filling of the ventricles will cause a general increase in tension, often of high degree and of rapid onset. Under these circumstances the extracerebral fluid in the subarachnoid spaces, particularly in the basal cisternæ, will be held everywhere at equally high tension and choked discs which are practically equal on the two sides may rapidly appear. This is more apt to be the case in subtentorial tumors, though an obstructive ventricular hydrops may ocur with basal tumors anywhere, and even with tumors of the hemispheres.[7]

Growths about the cerebellum have long had a bad reputation so far as the production of choked disc and resultant blindness is concerned, but it must be recognized that certain tumors, like the endotheliomata of the cerebello-pontile angles, may exist for years with absent or insignificant pressure symptoms, until the flattening of the pons and medulla blocks the iter and leads to an acute ventricular overfilling. We have seen long-standing tumors of the hypophyseal region do the same thing, namely, ultimately, lead to a filling of the lateral ventricles through pressure and deformity of the third ventricle, so that a double choked disc may become superimposed on the old atrophic nerve-heads. Still, it is the rule for tumors in this situation to cause an optic atrophy through direct pressure, without the intermediation of a choked disc.

Centrally located tumors would naturally be expected to increase pressure equally throughout the cranial chamber and cause an equal choking of the discs, and this usually is the case. Indeed, if all tumors exerted their pressure effects equally in all directions and at all distances, we believe that the two discs would always show practically equal changes.

Tumors which do not cause a general increase of intracranial tension through hydrocephalus are much more apt to lead to an unequal process in the two eyes. This is particularly true of growths in the hemispheres and of those which are situated, roughly speaking, in the neighborhood of the optic tract—temporal lobe tumors, for example, and those within a short radius of the insula. There is sufficient pressure discontinuity between the basilar arachnoid spaces on the two sides, through the interposition of the third ventricle and infundibulum to cause the fluid pressure in the optic sheath to be considerably greater on the side of the growth than on the opposite side.

The pressure effects of a growth, as is well known, diminish inversely with the distance from the growth, and it is easy to understand that subarachnoid fluid may be pent up in the neighborhood of the chiasm by a tumor of one hemisphere, so that the homolateral nerve can be affected more than the other. Still it must be remembered that tumors springing from one side may grow entirely away from their point of origin and strongly indent the opposite hemisphere—a matter which is particularly true of the frontal lobes, owing to the relatively feeble support of the falx in this situation. The ophthalmoscopic findings in cases of this character are of course misleading, and they indeed cast the chief doubt on the value of choked disc as a means of localization.

However this may be, in 70 per cent. of our cases the papilla on the side of the tumor was the one most involved; in 80 per cent. of the cases seen before choked discs made their appearance the first swelling ultimately occurred in the eye homolateral to the tumor; and in 72 per cent. the ultimate damage to the nerve was greatest on this side.

We have seen some patients in whom the opposite eye has shown the greater degree of swelling. This possibly can be attributed to anatomic peculiarities of the optic sheath, which may be a factor to be considered in some individuals; to the indentation of, or a possible area of cerebral edema of the hemisphere opposite to the growth; or, finally, to the fact that the patient's examination may have been made when the disc primarily most affected is declining in height. As a matter of fact, it is of greater value in determining the location of a tumor to estimate the damage already done to one or the other nerve than to depend simply on the existing height of a swollen disc. With this in view it is our custom to search for the new white connective-tissue changes in the disc and around the vessels, to look carefully for the signs of atrophy, to make a careful plot of the visual fields and to measure the central vision. These things are the best index of what has already taken place in the disc and may prove to be the best localizing (right or left) signs.

As has been pointed out, subtentorial tumors, owing to their situation and the resultant hydrocephalus,

7. In J. M. Martin's analysis (Lancet, 1897, ii, 83) of 601 tumors those of the corpora quadrigemina gave 100 per cent. of choked disc. We have had three of these cases not only showing choked discs but double blindness and deafness.

which first or last is almost inevitable, will often produce at some time in their course a greater swelling of the discs, and one more rapid in its onset, than tumors situated far forward. Only in exceptional cases has this failed to be the rule in our series. The average height of the discs in cases of cerebellar tumors was 5½ D.; in tumors of the cerebral hemispheres 3½ D. The difference is probably greater than would appear from these figures, since many of the patients with cerebellar lesions have been operated on during a period in which the discs were steadily gaining in height.

Tumors may continue to grow and still show a fluctuating degree of neuroretinal edema, often with complete temporary subsidence of the process, even without decompression. This can occur from a variety of causes. There may, for example, be periods of temporary relief to an obstructive hydrocephalus through the occasional escape of fluid. Then, spontaneous hemorrhages into the substance of a vascular tumor may cause a sudden rise of intracranial tension with a resulting elevation in the height of the discs, which subside again as the blood is absorbed. Further, cysts which possess a variable degree of tension not infrequently develop in degenerated areas of a tumor. Finally, an advancing growth may lead to a local cerebral edema in its immediate neighborhood, or indeed in a remote situation, with temporary increase of tension and a swelling of the discs which lessens as this edema passes away.

There is great variability in the length of time a choked disc may persist without leading to infiltration sufficient to produce degeneration with optic atrophy. It depends of course on the degree of severity of the process and this in turn on the degree of increased tension. In one of our patients a marked papillary edema, which had been known to be present for three and a half years, subsided in less than three weeks after a decompressive operation, leaving a central vision of 20/20 in each eye and only a slight constriction of the visual fields for form.

A fresh choking may occur on atrophic discs, whether the atrophy be primary or the consequence of a preexisting choked disc which has disappeared. Marcus Gunn some years ago recorded an instance of this; Yamaguchi and de Schweinitz have recently called attention to a similar occurrence; and we have had opportunities of confirming these observations.

A young man was operated on for the removal of a large cerebral cyst, which presumably was a degenerated glioma. Atrophy of both optic nerves without swelling was present, doubtless a relic of the active stage of the growth some six years before. A large, postoperative, extradural extravasation formed, and the resulting increase in intracranial pressure led to an acute swelling of the discs, which subsided promptly after the evacuation of the clot.

These occasional postoperative extravasations have often given us information of great interest, and the examination of the eyegrounds has usually been the telltale of a process which demanded reopening of the wound.

A young woman was operated on for a focal epilepsy without other symptoms, and a fairly large, infiltrating, cortical glioma was unexpectedly disclosed. There had been no choked disc or other clinical evidences of cerebral pressure, and on reflecting the bone flap no tension of the dura or brain was found. The growth was extirpated and the patient recovered well from the anesthetic, but in the course of a few hours she became unconscious and examination of the fundi revealed an acute choking of both discs. The wound was immediately reopened, disclosing a large subdural clot, which was evacuated.

The surgical experience in the case of this latter patient confirms what Hughlings Jackson was among the first to point out, namely, that a choked disc need not accompany a tumor even of fairly large size. It serves, furthermore, to give the most reasonable explanation for the absence of pressure symptoms, on the ground that an infiltrating tumor need not increase the intracranial tension. We have met with a number of other examples of this same thing.

On the other hand, we believe that a certain low grade of choked disc is not infrequently overlooked. There is one type in particular which is detected with the greatest difficulty, namely, that in which both disc and retina are uniformly edematous and the structures remain clear. For example:

A patient was sent to us whose history and physical condition clearly indicated the presence of a growth in the central region of the right hemisphere. His eyes had been frequently examined by a capable ophthalmologist, who reported that there had never been any observable "retinitis" of either disc. We were rather inclined to believe that the nerves and retinæ were not normal, but we could not be positive of this. A palliative exploration with decompression was performed, and in a few days the complete disappearance of an unsuspected edema from the retina, leaving prominent the discs, the swelling of which subsided more slowly, cleared up our uncertainties.

Thus, without decompression, incipient choked discs may be extremely hard to distinguish from simple hyperemia, and the greatest care must be used to avoid error.

On other occasions we have observed, while the process is in its incipiency, this diffuse obscuration from swelling of both disc and retina, but as the nerve-head increases in height the retinal edema usually disappears. Conversely it has been seen to return as the swelling of the disc subsides. Thus, with a low grade of pressure or with an early process, edema of the retina may be more extensive than when there is a pronounced choking of the disc.

We find it difficult to reconcile these observations with the view that the low grade of retinal edema is characteristic of a true neuritis, for every link connecting the two processes can be made out. Thus, we have seen cases of so-called "descending neuritis" lose every supposed ophthalmoscopic characteristic of that condition and insensibly pass into choked disc; and conversely not a few choked discs have eventually shown the picture of descending neuritis. Though they are not common, we have seen typical choked discs in cases of meningitis, but only when the intracranial tension was found to be greatly elevated. After operation, despite the continuance of meningeal inflammation, the choked disc or, if you will, the descending neuritis, may entirely clear away.

Subdural hemorrhages from bursting fractures of the skull occasionally produce the picture of descending neuritis in one eye and of choked disc in its fellow, while removal of the extravasation may lead to a complete subsidence of both conditions. It hardly seems credible that one is a true neuritis and the other a choked disc, both caused by the same injury, appearing in the same individual and relieved by the same operation.

When choked disc is of high grade, periods of transient blindness may occur lasting from a few seconds to an hour or more. These periods of temporary amaurosis we find, in agreement with Leslie Paton, to have been most common in association with cerebellar

tumors. It is Oppenheim's conjecture that a distention of the third ventricle due to an obstructive ventricular hydrops may, by direct pressure, so affect the optic tracts near the chiasm as to cause the early amblyopia and blindness, and it is conceivable that such a process can account as well for these temporary losses of sight. One of our patients was able to induce the condition on assuming a certain posture.

A young married woman for some years had suffered from headache, homonomous hemianopsia and hemianesthesia, which were thought to be hysterical, until a double choked disc finally made its appearance. On sitting up and bending her head well over, her pupils would dilate *ad maximum* and she would slowly become blind. When in this condition, an ophthalmoscopic examination would reveal no appreciable change in the condition of either arteries, veins or degree of swelling. A combined exploration and decompression was performed, with amelioration of her subjective symptoms, disappearance of the choked disc and cessation of the attacks of blindness.

Hughlings Jackson was among the first to lay stress on the fact that central vision may be preserved in almost normal acuity until a late stage of "optic neuritis." Owing to this fact the tragedy of a sudden and unexpected total loss of vision is unfortunately not uncommon. We have, on a number of occasions, been persuaded to operate on patients after such an occurrence, in the hope that some vision might be restored. This has never occurred even though two of these patients were decompressed within a day or two after the blindness set in, and though in one of them a cerebellopontile tumor was successfully removed. Indeed, as has been the experience with others, we have seen cases in which a palliative operation has been deferred so long that blindness from complete atrophy followed the operation as the choked disc slowly subsided.

The study of the visual fields will usually give a much better index of the extent of implication of the nerve than will any tests for acuity, and there are certain features of the color fields in particular which we regard as characteristic of an early stage of implication of the nerve—a matter which must be deferred for another occasion.

HISTOLOGIC AND SURGICAL NOTES

The histologic alterations in the nerve and retina we have found to vary with the extent and duration of pressure and to bear little if any other relation to the character of the associated disease or injury. The greater the swelling and the more enduring the process the more marked the histologic changes have been.

The pathologic findings usually varied from a slight swelling of the disc with overfilling of the veins to great dilation of the subvaginal spaces around the nerve and to complete atrophy and marked degenerative changes in the retina. The microscopic picture corresponds with the gross pathologic changes, consisting in the main of small and large hemorrhages in the nerve-head and retina, cystic and colloid changes, hyaline thrombi, marked separation and tortuosity of the nerve bundles, proliferative changes in the vessels, perivasculitis, round-celled infiltration, fatty deposits in areas where exudates were present, cytoid masses, retinal separation and more or less complete disintegration of the fibers of nerve and retina.

Through the courtesy of Dr. F. H. Verhoeff of Boston we have had the privilege of studying and comparing with him sections of the optic nerves and retinæ taken from a number of undoubted cases of brain tumor and of nephritis in his and our own collections. The histologic changes varied but little in the two conditions, and the essential features of each left little doubt as to their close histologic connection. It seems very probable that the two lesions represent only modified forms of a neuroretinal disturbance originating from the same cause. Sclerotic changes are present in the vessels in nephritis more often than in tumor; this, however, is another sign of the primary disease, and, so far as the retinitis is concerned, is a mere coincidence. It possibly gives the retina less power to resist changes resulting from edema and modifies the picture seen ophthalmoscopically. Thus, since the presence of a stellate figure has been recorded in our series in nearly as many cases of undoubted brain tumor as of undoubted nephritis, we naturally incline to the view advanced by others that it can not be regarded as typifying renal disease exclusively.

Our experience encourages us to advocate, not only in many cases of cerebral tumors but in a number of other conditions, an early decompression. Needless to say, a cranial operation is regarded by many people, both lay and professional, as a serious performance—and perhaps justly so. It is necessary, therefore, that an operation proposed for the relief of the retinal lesion in its incipiency, at a time when it is difficult to make the patient appreciate the serious nature of his trouble, should be one practically without risk, easy of performance, one which requires the shortest possible hospital residence and leaves the least possible external evidence of its having been carried out. We know of no operation other than the subtemporal decompression described by one of us which in so large measure meets these requirements.

Permanent alterations in the fields and loss of visual acuity invariably take place if choked discs are allowed to run their course, and in a very large proportion of cases complete blindness supervenes before death terminates the story, and indeed only too often in cases in which the primary lesion does not lead to a fatality.

Any permanent alteration in the nerve will cause a corresponding change in sight. This often holds true even if the process is interrupted by an operation, but the important point is that the longer the changes persist the greater will be the loss in vision. In a number of patients the choked discs have subsided after operation with complete restoration of normal visual acuity; in a larger number the condition has been checked without further advance, and the sight has remained as before the operation. Unfortunately we have seen a few patients in whom, in spite of the decompression, vision has become worse, and one, indeed, in whom it was lost. These latter patients all had extensive exudates and marked proliferation of connective tissue in the disc and retina, and the further loss of sight was due solely to the contraction of these masses with resultant degeneration of the vulnerable nerve fibers. These cases offer the strongest argument for early decompression; for if the choking has been allowed to advance to this high degree, unavoidable contracture of the new tissue may shut down on the nerve fibers and serve to produce atrophy regardless of any intervention.[8]

8. The results of our surgical measures, so far as the changes in the eyegrounds are concerned, do not differ greatly from those given by Leslie Paton in his excellent and concise review of a series of cases observed by himself and Marcus Gunn in the National Hospital, Queen Square (Optic Neuritis in Cerebral Tumors and its Subsidence after Operation. Tr. Ophth. Soc. U. Kingdom, 1905, xxv, 129). Our series of cases has been considerably larger than that which forms the basis of his report, and

If we are correct in thinking that increased intracranial pressure—a condition which in its less severe degrees can be relieved by operation—is the cause of choked disc, and with the knowledge that choked disc frequently leads to blindness, the proper course to pursue must seem clear to every one. We do not wish to seem radical in this, for we zealously endeavor to give medicinal therapy and cautious delay their just dues. Still, in many cases it is often the safer course to decompress first and push the drug treatment afterward. One method promises sight, the other possible blindness, and the iodids are much better borne when the patient is free from headache and nausea.

Further, in undoubted tumor cases it is often unwise to wait until the growth can be located before operating. The primary effort should be made to alleviate the patient's physical discomforts and assure the preservation of vision; then one may delay with lessened anxiety. We have had, during the past five years, many patients with unlocalizable tumors, who, as the result of an early decompression, are perfectly comfortable, with either normal sight or vision amply sufficient to allow them to continue with their livelihood. A number of these patients have returned after variable periods with an onset of focal symptoms which have enabled us to determine the situation of the growth; in a few of them the lesion has proved to be accessible and has been successfully removed.

SUMMARY

It is our view that the early injection with stasis of the vessels, the marked edema with projection of the papilla, and the ultimate round-celled infiltration with new tissue formation which leads to atrophy, are merely stages of the same process. We believe that the mechanical views of Schmidt-Rimpler and Manz are largely correct and that the lesion is primarily due to the crowding into and distention of the sheath of Schwalbe by obstructed cerebrospinal fluid, resulting in an edema of the nerve-head, in which toxic elements play an insignificant part.

We believe, with Parinaud and his followers, that an acute internal hydrocephalus in the closed adult skull almost inevitably leads to a choked disc, but we attribute this to the presence of arachnoidal fluid forced into the optic sheath rather than to an edema spreading from the brain to the optic nerve; furthermore, choked disc is often present with tumors which have not led to hydrocephalus and is usually absent in the "essential" hydrocephalus of infancy.

We believe, since a small, benign, slow-growing and remote tumor so situated as to cause hydrocephalus—for example, by pressure on the iter—can lead to a high grade of choked disc, whereas a malignant, rapidly-growing glioma which causes but little pressure, owing to the way in which it infiltrates the brain, may produce no change whatsoever, even though situated near the optic nerve, that toxic products in the cerebrospinal fluid can hardly be held responsible for any stage of choked disc. With others, we have observed cases of sella turcica tumors which have led to optic atrophy from direct pressure without producing choked disc. In these cases, owing to the situation of the lesion, fluid is not crowded into Schwalbe's sheath.

We believe, since choked disc, contrary to many authorities, is rare in meningitis and equally so in abscess unless there is an obstructive hydrocephalus leading to greatly increased pressure, that meningeal inflammation of itself must be looked on as an unlikely source of the lesion. Furthermore, the process is frequently seen after cranial fractures, apoplexies, and not uncommonly after simple operations when the question of an infection can safely be ruled out.

We believe, finally, since there is an almost uniform subsidence of what we consider to be choked disc (barring certain cases complicated by obstructive hydrocephalus) after decompressive operations, whether conducted for the pressure of tumor, cerebral edemas of one sort or another (traumatic, nephritic or vascular), infections, or intracranial hemorrhages, that a mechanical rather than a toxic process must play the chief rôle in the causation of this well-recognized lesion.

ABSTRACT OF DISCUSSION*

ON PAPERS BY DRS. SPILLER† AND CUSHING AND BORDLEY

DR. H. V. WÜRDEMANN, Milwaukee: My experience with the procedure of trephining for this condition is confined to three cases, and I speak mainly from a theoretical standpoint.

As the causes of optic neuritis are so varied, and in the main are general diseases, as syphilis, nephritis, the rheumatic diseases, the grave anemias and diseases of the vascular system and poisons, we are limited in a surgical sense to optic neuritis caused by diseases of the orbit and adjacent sinuses, amenable to the usual surgical treatment, to infectious diseases characterized by spinal and cerebral meningitis (for this lumbar puncture is certainly preferable); and to papillitis occurring in brain tumor, due to increased intracranial pressure, and speedy relief by trephining seems indicated.

Although the pathology of choked disc is usually given as due to increased intracranial pressure, with tension of the optic nerve sheaths, from a theoretical standpoint, I consider that this is true only in the case of intracranial hemorrhage and actual new growths. Certainly, in all cases there is local infiltration of white cells and exudates within the sheaths, but this is only the effect, not the cause, of papillitis, which is in most cases due to general diseases, acting through germs or toxins. The treatment is that of the general disease, together with eliminative measures, more particularly pilocarpin sweats and iodid of potassium in large doses; the same form of treatment is used for papillitis due to drugs or poisons. In diseases of the orbit and adjacent sinuses, certainly local surgery is indicated. In certain infectious diseases, more particularly spinal and cerebral tuberculous meningitis and epidemic cerebrospinal meningitis, lumbar puncture not only relieves the meninges of the excessive amount of toxic cerebrospinal fluid, but likewise the pressure within the optic nerve and the cerebral ventricles, and is here recommended. In intracranial hemorrhages and tumors, optic neuritis is believed to be caused by pressure; the relief of this intracranial pressure has relieved or brought the papillitis to a standstill, preventing the further infiltration of the white cells into the neuroglia and consequent destruction of the optic neurons and preventing the secondary deposition of white elastic tissue, which causes the resultant atrophy of the optic nerve. Therefore, I believe that trephining should be restricted to cases of optic neuritis caused by intracranial hemorrhages and tumors, lumbar punctures being reserved for the other surgical indications, as these operations prevent the patient from becoming blind.

Edward Stieren says that the skull and dura mater should be opened as soon as the diagnosis of increased intracranial

contains many more cases of early one-stage decompression for unlocalizable growths, which may account for the fact that there is a considerably higher percentage of complete restorations to the normal. It would be superfluous for anyone to attempt to improve on his vivid description of the ophthalmoscopic appearances to be observed during the advance and subsidence of the process

* The discussion appeared in full in the Transactions of the Section on Ophthalmology and in the Transactions of the Section on Nervous and Mental Diseases, 1908.

† The paper of Dr. Spiller appeared in THE JOURNAL last week.

pressure is established, medical treatment being instituted afterward.

Horsley advises opening the skull and dura mater in optic neuritis of anemic or toxemic origin. He places considerable responsibility on the medical adviser if blindness results, after the process has been diagnosed, due to failure to arrest it by the simple palliative remedy of opening the dura. The ophthalmoscopic appearance of the disc must be carefully interpreted before the degree of vision after operation is predicted. The greater the secondary changes in the disc and retina as shown by the yellowish-white stippling patches of exudation or opal white atrophic changes, especially if associated with muscular figures, the more will vision be impaired.

Babinski and Chaillous say that the therapeutic value of lumbar puncture in ocular pathology has not been thoroughly studied. A few authors only have incidentally noted its favorable effect in certain affections of the optic nerve. According to the observations of Drualt, papillary edema, as well as other symptoms of the cerebral compression, may disappear after evacuation of the cerebrospinal fluid, but the result is far from being constant. Quincke joined a vertical glass tube to the needle used to make the puncture to enable him to measure the pressure of the cerebrospinal fluid and establish the relation between intracranial hypertension and the symptoms that are attributed to it. In this way, in case of "choked disc," lumbar puncture may aid the diagnosis, and it may be repeated if it causes any improvement.

The relief, sometimes so immediate, of visual trouble following lumbar puncture, favors the theory of Dupuy-Dutemps, who asserts that papillary edema is due to compression of the central vein in its passage through the dural sheath.

Babinski and Chaillous conclude that lumbar puncture should be considered a therapeutic measure in cases of a papillary edema due to traumatism or inflammation while in intracranial tumors it can be only palliative; that it is well to repeat the punctures as often as may seem necessary to avoid the effects of compression, particularly atrophy of the optic nerve.

Lumbar puncture appears to be particularly effective in the clinical type described by Quincke under the name of "serous meningitis." In many cases of meningeal hemorrhage, particularly the traumatic, the method may be indicated when there is no urgent necessity to evacuate the blood. Palliative results are obtained in hydrocephalus. In optic neuritis from cerebral tumor prudence should be used in treatment by lumbar puncture, as in some cases sudden death has followed it, and in others there has been an aggravation of the nervous symptoms, particularly of headache and vomiting. In the uremia of Bright's disease there may be real relief, though only of symptoms. In labyrinthine diseases of the ear lumbar puncture diminishes the vertigo and tinnitus and even the deafness.

In all three cases the effect is obtained by diminution of the tension produced by the excess of cerebrospinal fluid. There is a very reliable clinical sign of this hypertension in optic neuritis of stasis, and the diagnostic and therapeutic value of lumbar puncture in optic neuritis has attracted the attention of neurologists and ophthalmologists.

DR. CHARLES H. FRAZIER, Philadelphia: I shall base my remarks chiefly on an experience with between fifty and sixty decompressive operations. There is no therapeutic measure, physical, medicinal or surgical, which gives greater relief to so apparently hopeless and intensely suffering a class or group of patients as the decompressive operation. This operation should include among its indications traumatism, perhaps epilepsy, meningitis, acute and chronic, with hydrocephalus. As for tumors, we should not be content with purposeful decompression except in those cases in which we have assured ourselves that the tumor is inoperable, inoperable signifying either that the tumor can not be localized or can not be removed. The ease with which the simple decompressive operation can be performed and the immediate relief it affords,tempt surgeons and neurologists to be content with palliation. If the habit becomes prevalent, many operable tumors will be overlooked, and the percentage of operable growths will not increase as fast as it should.

The influence of decompression on beginning or fully established optic neuritis is naturally uppermost in the minds of the members of the ophthalmologic section. With but few exceptions the results in our work in the University Hospital have been good. The prognosis seems to be better in those cases in which the choked disc subsides comparatively slowly. In fact, we have never observed as rapid a disappearance of the choked disc as has been recorded by others.

Surgeons have been accustomed to relieve intracranial tension due to the result of traumatism, and particularly fractures and hemorrhage. There should be a limited number of cases of cerebral edema, resulting from cerebral contusion, in which decompression might relieve intracranial tension sufficiently to tide the patient over; but certain factors may render operation useless, and especially the rapid and diffuse character of the process. Tumors are more localized, grow more slowly, and do not, as a rule, involve the medullary centers. The edema of contusion is more or less widespread, and even though decompression is established, the process continues and eventually through direct or indirect involvement of the circulation of the vital centers, causes death.

In the fifty or more operations which we have had, excluding those for the relief of traumatic conditions, we have lost one patient in twenty-eight of those in whom the lesion was in the cerebrum. In this case the autopsy proved that the patient had multiple sarcomata, involving the medulla and pons as well as the cerebrum. Often we did more than a simple decompressive operation. In more than half the cases this was preceded by an exploratory operation, which, of course, increased the operative risks. In 25 operations for lesions of the cerebellum, we have had 6 deaths; 1 from pneumonia, 1 a typical cerebellar death, and 4 from shock. In the first 8 of the series there were 3 deaths, and in the last 14 only 3 deaths.

As to the general effect of the operation, 70 per cent. of the patients may be said to be considerably relieved, and 10 per cent. have been entirely relieved of the symptoms for the relief of which the operation was performed.

As to the effect on individual symptoms, we find in our histories that as to choked disc only three are recorded as uninfluenced at the time the patients were discharged from the hospital; and some of these already had optic atrophy. As to headache, two are recorded as uninfluenced by the operation; as to nausea and vomiting one; and as to vertigo one. Some of those cases which were referred to as being uninfluenced at the time the patients were discharged, we know from subsequent observations, have improved. I am referring now particularly to the choked disc.

As to the time in which operation should be performed, I believe that in an increasing optic neuritis we should not wait for the development of localizing symptoms or other signs of brain tumor or intracranial lesion. I believe also that we should not hesitate to operate in cases which are apparently hopeless, the patients being in a grave condition at the time they are brought to the surgeon.

In one case, particularly, in which I recall having operated during the past winter, the patient was almost unconscious, delirious for a number of days, and had violent headache in addition to optic neuritis; the situation seemed hopeless. A rapid decompression, however, was followed by almost as rapid a restoration to consciousness and the subsidence of all symptoms except an aphasia, which is gradually disappearing.

DR. G. E. DE SCHWEINITZ, Philadelphia: I endorse all that has been said on the value of decompressing operations for choked disc and join in all the protests made against unreasonable delay in performing these operations. I would say a word, first, in regard to the relation of the refraction of the eye to the development of choked disc, or, to use another and perhaps a better term, "brain-tumor neuritis," or Mr. Marcus Gunn's recently delivered term, "brain-tumor papillitis."* All those who have had the opportunity of observing the effect of the

*Since these remarks were made, the last volume of Mr. J. Herbert Parsons' "Pathology of the Eye" has appeared. In this he urges the adoption of the term "papilledema" as a substitute for the word "choked disc," that is, the *Stauungspapille* of the Germans.—G. E. DES.

relief of intracranial tension on engorgement of the nerve-head must readily agree that any theory which omits this element is not worthy of serious consideration. Not only is the important relationship of increased intracranial tension to the development of choked disc proved by recent work in brain surgery, but it has received strong experimental proof, notably from Merz in 1901; and his work is confirmed by the researches of Drs. Cushing and Bordley. Therefore, it is difficult to be divorced from the term "choked disc," which is so expressive. It is a well-known fact that so-called brain-tumor papillitis, or choked disc, develops either slowly or not at all in myopic eyes. This, as Mr. Marcus Gunn points out, in all probability depends on the difference in the termination of the optic nerve sheaths in the sclerotic. In hyperopia the termination is more abrupt and in a more conical form than in myopia, in which the sheath spreads itself out more gradually into the sclera, and therefore allows an easier filtration of the fluid which is the cause of the edema. Be this as it may, in the examination of all eyes in the subjects of suspected increased intracranial tension from any cause there should be a full consideration of the refraction of the eye.

In making record of a choked disc, or tumor papillitis, there should be a definite statement, not merely of its height, but of its height above the level of the eyeground. Doubtless this is always perfectly clear to the observer, but it has not always been made clear in the records. This is a point of some importance in noting the results of operative interference on the height of the swelling. Take the case of a patient in Dr. Frazier's ward: Although the surface of the disc is + 5 D., since the trephining there is little or no swelling, or, more accurately, edema elevation, because the patient has a hyperopia of 5 D. at the macula, and the original height of the disc was 3 D. above that level.

It is desirable to make record of the corrected vision of the patient, both before and after operation. Unfortunately, sometimes the acuteness of vision has apparently been recorded with the aid of the patient's correcting glasses, but later records of vision have been made without this aid, or sometimes the procedure has been exactly the reverse. I could give a number of examples showing how failure to note the refraction, both before and after operation, has introduced inaccuracies in the ultimate records of the visual results.

It has been my own experience that the subsidence of choked disc after decompressing trephining is not a very rapid one in many instances, although there have been some notable exceptions, one of which I believe has been reported in the Section on Nervous and Mental Diseases by Dr. Sinkler during this meeting. It seems to me that there should be a sharp distinction between the primary subsidence of the engorgement of the retinal vessels, the size of which sometimes markedly diminishes in the first twenty-four or thirty-six hours after trephining, and the subsidence of the height of the edematous disc, which is usually apparent at a later period. This point, I believe, has been made by von Kruedener in his recent article. My own experience has been that the first decided change in the engorged nerve-head is usually about the seventh day (certain exceptions have been referred to), and from then on the subsidence is quite rapid, so that most of the edema disappears by the end of the fourth or fifth week. This experience agrees with that of Mr. Leslie Paton, recorded in his recent admirable papers on this subject. Moreover, it has seemed to me that the ultimate visual results were better if there was a comparatively slow subsidence of the engorgement edema than if this disappeared very rapidly.

Naturally, the prognosis as to sight is better the earlier the operation is performed. If operation can be performed in one of the first three stages of tumor papillitis (with which stages all of us are familiar), the prognosis *quoad visum* is extremely favorable. If, however, the operation must be delayed until the fourth or fifth stage of choked disc, the prognosis is much less favorable, and, indeed, if it is much delayed, the operation can be of little service in restoring sight. In this connection, however, it should be remembered that sight does not always return immediately after the operation, and the records will show that sometimes it is necessary to wait for a considerable period of time, even five or six weeks, before the best results are attained. Therefore, if possible, the surgeon should always operate during the first, second or third stage of tumor neuritis, but should not hesitate to operate, no matter what the stage is, not only for the relief of intracranial pressure, but for the sake of good visual result occasionally possible, even in apparently most unfavorable cases.

A difficult differential diagnosis is between beginning tumor neuritis and the so-called spurious optic neuritis not uncommonly seen in hyperopic eyes. I suspect that in some cases of reported engorgement edema of the papilla the observer may have been deceived by the presence of a hyperopic neuritis which he mistook for a beginning choked disc due to increased intracranial tension.

Occasionally there is rapid loss of sight after trephining, when one would expect just the contrary result. In two notable instances, after perfectly correct technical operations, both of them on cerebellar tumors, I have seen rapid blindness follow in spite of the prompt relief of intracranial tension. It has seemed to me that a possible explanation of some of these cases was great loss of blood at the time of the operation. The hemorrhage may have caused some change in the ganglion cells of the retina, exactly as such changes may be produced by free loss of blood after hemorrhage from the stomach or bowels. If so, the mechanism of blindness under these circumstances is the same as that which occurs in quinin, methyl-alcohol poisoning and other toxins, as has been so well shown in the researches of Ward Holden and others. I know that there are other explanations of this blindness.

DR. PETER BASSOE, Chicago (presenting a patient): This patient, a clergyman, 42 years of age, in the fall of 1904 developed symptoms of brain tumor, severe headache, mostly in the morning, associated with vomiting and dizziness, diminution of hearing on the left side, slight impairment of vision and a tendency to fall to the left in walking. I saw him first in November, 1906, and then he presented the following symptoms: Staggering gait, tendency to fall to the left, slight left-sided ataxia, diplopia due to paresis of the left external rectus, nystagmus, which was coarse and slow in looking to the left, fine and rapid in looking to the right; bilateral optic neuritis, very slight on the right side, but marked on the left side, the swelling as measured by Dr. Wilder being 3.5 diopters. The vision in the left eye was 20/30, in the right eye 20/20. There was total nerve deafness on the left side with no evidence of middle ear disease past or present. A diagnosis of left-sided cerebellar tumor was made and operation advised. The operation was performed by Dr. Arthur Dean Bevan, Nov. 22, 1906. A suboccipital cranial resection was made and a tumor was felt in the left lobe of the cerebellum half an inch below the surface. Just how large it was and whether infiltrating or not could not be easily determined. The patient took the anesthetic very badly, and removal of the tumor was not attempted at that time. The dura was not sutured and the bone not replaced, so as to allow a hernia to form. It was not known at that time whether this operation was to be the first step in removal or a merely palliative operation. Three hours later, as soon as the patient came out of the anesthetic, I examined his eyegrounds and I am certain that there was a distinct change, as I then for the first time could see the outline of the left disc. Unfortunately, he was not examined by an ophthalmologist until three days later. Then Dr. Wilder noted that the disc outlines were clearer, but the swelling remained the same, so the change observed by me must have been chiefly in the amount of blood in the veins. On December 13, nearly three weeks after the operation, Dr. E. V. L. Brown measured the highest point of the disc to be a little less than two diopters; so there had been a considerable recession in the course of the three weeks. The left-sided ataxia decidedly increased after the operation. On December 14 a second operation was made and the tumor removed. It was a cystic glioma of the size of a walnut and shelled out very easily. Since then the patient has made slow but steady progress. The vision was measured a couple of times after the operation and in the left eye one measured 20/40, once 20/30, and is now 20/40; the right eye each time

20/20. The ataxia has gradually diminished. The patient returned to his work, which he formerly had to discontinue on account of severe headaches, and during the past year he has been able to preach twice every Sunday. The severe headaches have entirely disappeared. The chief trouble now is the ataxia on the left side, which I consider to be due to the cerebellar hernia, which can be readily felt. Dr. Brown yesterday examined the patient's eyegrounds and finds that the left disc is best seen with a + I lens. From what I understand, there is now no sign of any atrophy in the disc, and an abundance of small vessels can be seen. The left external rectus paresis, the left nerve deafness and the nystagmus still exist.

DR. CHARLES K. MILLS, Philadelphia: Trephining for cerebral symptoms dates far back even of the history of modern localization and cranial surgery. During my experience of twenty-five or thirty years, in not a few instances palliative operations were suggested for symptoms, like headache. I recall Dr. Weir in this connection. With regard to what are now called decompressive operations for the relief of optic neuritis, headache, vertigo and nausea, our recent experience, I think, dates distinctly to 1901, when at the Philadelphia Neurological Society I presented a paper on brain tumors, especially with reference to the parietal and prefrontal lobes, followed by a paper by Dr. de Schweinitz on optic neuritis. This was followed by the suggestion of trephining for the relief of optic neuritis by Dr. Spiller, who asked Dr. de Schweinitz whether he considered it justifiable to trephine when choked disc and certain symptoms suggesting brain tumor existed, although the growth could not be localized; that is, whether he considered it justifiable to trephine in the hope of preserving vision and modifying some of the symptoms of brain tumor. In some cases the mere opening of the skull seemed to have been of benefit. An account of this meeting and the discussion is to be found in the *Journal of Nervous and Mental Disease* for May, 1901. Since that time we have had an increasing number of cases in which both radical and palliative operations have been performed.

If optic neuritis is present and increasing, there should be no dallying with sodium iodid or potassium iodid and mercury, no waiting for the development of further symptoms, in many cases no waiting even for focal symptoms, so important is it that these operations should be done promptly.

The rule which we follow at the University of Pennsylvania is, whenever there are any focal indications, however slight, to make the decompressive or palliative operation in a region that would allow of a possible radical operation. It makes some difference, perhaps, but not very much, as to the part of the skull which opened. Over the right temporal lobe or the right prefrontal lobe are favorable positions. We have a habit at the University of Pennsylvania of working in collaboration—Dr. Spiller, Dr. Frazier, Dr. de Schweinitz and others—and in every case in which we have a tumor with optic neuritis we agree on operation as quickly as possible.

DR. CHARLES E. BEEVOR, London, Eng.: When I first began to study neurology the theory held was that neuritis was caused purely mechanically; the choked disc idea was the theory that was advocated; then later on some papers were read, I think at the meeting of the Ophthalmological Society in London, which argued that it was rather due to descending changes in the optic nerve; but I have always felt that the old theory was probably the correct one, and that the cause of the neuritis was really purely mechanical. I was, therefore, greatly interested to learn that Dr. Cushing and Dr. Bordley had come to the conclusion from the experiments that the neuritis is really mechanical.

How soon after the injection of the fluid in dogs do symptoms occur in the optic disc? Is it a question of hours or of days? I understood that this injection of paraffin did not produce the choked disc so easily as injection of fluids. I suppose that the reason of this is that the brain becomes used to, and accommodates itself to pressure, and, therefore, the effects are not so marked.

It has been a mooted question, especially in England, whether the optic neuritis occurs in the eye on the same side as the tumor or on the opposite side. Sir Victor Horsley holds that the neuritis occurs first of all, or is more intense, on the side of the tumor; but in a paper by Leslie Paton, read at the Ophthalmological Society of London recently, he comes to the conclusion that one can not lay much stress on that. My own point of view is that the question of on which side the tumor occurs on is of least importance. For instance, if all the symptoms pointed, say to the left side and the neuritis was more marked on the right side, I should disregard it as a localizing symptom. In a percentage of cases it is more frequently, I think, on the side of the tumor; but not so with sufficient frequency to be useful in the question of diagnosis.

In cerebellar tumor I agree that the neuritis is more marked than in tumor situated further forward; in some lectures before the Medical Society of London I had the opportunity of bringing together three or four cases of tumors in the parietal region, and the extraordinary point there was that the neuritis developed very late. In one of these cases a man had symptoms of a tumor for over a year with hemianopsia and local fits, before optic neuritis developed, whereas in cerebellar tumor optic neuritis develops earlier and is more intense.

In a case of optic neuritis with no other symptoms it is difficult to say whether one ought to operate or not. I am inclined to wait in those cases, because one sometimes does find optic neuritis even in cases of anemia, and then it would be a great mistake to operate. But if the patient has agonizing headache and vomiting and optic neuritis, I think the sooner one operates the better, and one should not wait for localizing symptoms.

I have seen a case of loss of sight after the operation. Before the operation the sight was fairly good and no evidence of any optic atrophy was present; but, of course, intense optic neuritis, as was shown by Jackson some years ago, is perfectly compatible with good sight. It was formerly supposed to be impossible, but it is now recognized that intense optic neuritis can exist without affecting vision. In this case after operation the vision rapidly deteriorated, the patient became completely blind, so that after decompression the vision became worse, instead of improving.

I understood Dr. Spiller to say that in cases of cerebellar tumor occurring in the ponto-cerebellar angle he would prefer decompression to operation. I should not quite agree with that. I think that in those cases, as already shown by Dr. Bassoe's case, one can operate and remove the tumors.

Lumbar puncture has no effect on optic neuritis, so far as I have seen. When the patient is comatose, respiration has ceased, but the heart has not stopped beating, I think we ought to operate, because, as Sir Victor Horsley has shown in the case of gunshot wound experiments, when the intracranial pressure is increased the respiration fails before the action of the heart does; and I have seen cases in which the respiration had failed in cerebral tumors and on operating and relieving the pressure, the patient has recovered consciousness.

DR. HARVEY CUSHING, Baltimore: We have frequently seen a decided subsidence of choked disc, within forty-eight hours, and in not a few cases soon after the operation. Of course, the rapidity of subsidence depends entirely on two things: 1, the character and success of the decompression, and, 2, the stage of the process, since in a long-standing edema which has led to infiltration the swelling can hardly be expected to subside as rapidly as in the cases in which there is little more than edema alone. An increase of the neuroretinal edema, which Dr. Spiller has seen in a few cases after trephining, is not improbably due to the increase of cerebral tension due to traumatic edema. We do not entirely agree with him on the question of decompression versus extirpation for lesions in the posterior cranial fossa, for a number of our most successful cases of tumor extirpation have been those in which the lesion was subtentorial. The excellent result in the patient with the cerebello-pontile tumor presented a few moments ago by Dr. Bassoe is an illustration of what may be expected in a large percentage of properly conducted operations in this situation. I wish to warn against promiscuous lumbar puncture in cases of brain tumor, particularly those situated under the tentorium, and also to express an opinion

as to the uselessness of ventricular puncture in tumor cases except as a diagnostic measure.

Marcus Gunn's views that papillitis is associated chiefly with hypermetropic eyes and is relatively rare in myopia does not entirely correspond with our own experience. We have had no case of myopia in which there has been demonstrable increase of tension without choking of the discs and have had two cases of hypermetropia with tumors of the hemisphere in which no choking occurred.

Dr. Beevor has asked how soon after injection we have seen a choked disc appear in our experiments. It is a matter of moments rather than of hours or days, and by "choking" we do not mean necessarily merely the signs of injection with venous stasis, but an actual swelling of the disc of three or four or more diopters. In a patient in the Johns Hopkins Hospital we have had, furthermore, a clinical illustration of the rapidity with which a choked disc may appear. An operation had been deferred owing to the absence of a choked disc, when there occurred a sudden loss of consciousness with swelling of the disc up to 7 D. in the course of a few hours. Death followed, and at autopsy a large hemorrhage was found in a glioma of the hemisphere.

I can not agree that it is immaterial where a decompression be done, and have given elsewhere reasons for regarding a subtemporal route as preferable to Saenger's parietal exposure. It is often dangerous to decompress directly over the situation of a tumor, for the dislocation which occurs in consequence of protrusion will not infrequently lead to a rupture of blood vessels entering a vascular growth with marked augmentation of the degree of pressure. I regard as an important measure, the primary subtemporal decompression in a patient who actually has a localizable tumor and one which may possibly be removable; for when patients are in a more or less critical condition, emaciated, with headaches, failing vision, etc., even though the case may be looked on as a favorable one for ultimate possible tumor extirpation, a preliminary decompression, which is the more simple measure, is often a helpful thing in so relieving the general physical condition that the more serious subsequent operation for extirpation can be done much more safely.

A still more important matter which Dr. Bordley and I have tried to bring out in our paper is the prompt decompression in cases of intracranial growth when the lesion is not localizable, for, as all those who have taken part in this discussion have said, the preservation of the eyesight is a matter of chief importance, and with a suitable decompression the tumor in certain cases, after months or perhaps years, may through gradual increase in its size, finally give evidence of its location, and, on exposure, may prove to be removable.

I hope that Dr. de Schweinitz will not give up the term "choked disc," at least in exchange for the term "tumor neuritis." It possibly is only a quibble of nomenclature, but I think that we ought to have some one term which will describe all grades of a condition which we recognize to be one, rather than to attempt to distinguish, as did von Graefe, the two stages, namely, those before and after marked swelling. Believing as we do, that the inflammatory condition is entirely a secondary process, we think that the term "neuritis" and "papillitis" are misleading and that the term which lays stress on the primary factor, namely, edema, is the proper one.

DR. WILLIAM G. SPILLER, Philadelphia: At the beginning of the winter I asked Dr. Sweet to have one of the students of the third year class of the University of Pennsylvania undertake some experiments on decompressive operations, and a certain amount of swelling of the disc by the introduction of foreign bodies under the dura in dogs was produced. Dr. Shumway made the examinations of the eyes. We were impressed by the amount of endurance exhibited by the dog under pressure of a considerable degree. A large piece of bone in many cases failed to produce choked disc or neuritis; and in other cases produced it only for a short time. These experiments will be reported later. I am convinced that tumor of the motor region—and probably the same is true of tumor of the parietal lobe—often causes choking of the disc, only late. I do not expect in tumor of the motor region of the cortex to find optic neuritis until the tumor has grown to considerable size.

I am somewhat in doubt as to the propriety of decompressive operation when the patient is almost dead. It is probable that it will do no good, and the surgeon may be subjected to unfair and serious criticism after an unfavorable result. We do not, as a rule, operate under such circumstances at the University Hospital.

A STUDY OF THE RESPIRATORY SIGNS OF CHOREA MINOR *

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St. Vitus' dance, Sydenham's chorea, chorea minor, is a distinct clinical entity and while the specific organism or toxic agent has not been definitely isolated, the work in this direction and the natural history of the disease has been and is such as to warrant the deduction now generally admitted, that it is a disease of bacterial or toxic origin. Clinically, chorea minor may be readily differentiated from other conditions resembling it but the differentiation is not always made and hence other conditions are often erroneously diagnosed chorea. This is notably true of the tic conditions. Again the usually observed motor manifestations of chorea may be and frequently are so slight that the true nature of the trouble remains unrecognized. The reason for such errors in diagnosis and for the non-recognition of the disease in its milder forms is to be found in the habit of basing the diagnosis on the presence of abnormal movements about the head and extremities which are usually so prominent in this disease.

"Never found a diagnosis in any disease or condition on the presence of a single sign or symptom," is a working axiom never to be forgotten in diagnosis. There are to-day no pathognomonic signs and symptoms. We are able to recognize prominent signs and symptoms in every disease, but they are always associated with other signs and symptoms if we will but search for them and our diagnosis in any case is most secure when founded on the greatest number of these. No one should be content to diagnose measles by the rash; a brain tumor by an optic neuritis; typhoid fever by the rose spots or tabes dorsalis by the presence of ataxia. Neither should he be content to diagnose chorea minor by the presence of abnormal movements. Abnormal movements about the head and extremities are usually prominent signs of chorea minor but they are not pathognomonic of the disease and they may be so slight as to be overlooked. In chorea minor, the abnormal movements have certain characteristics and when they possess these, we call them choreic or choreiform movements and while they are not pathognomonic of the disease when we really recognize them as such in conjunction with other symptoms just as characteristic, the diagnosis of chorea minor is readily made.

It will help us in the study of the chief respiratory signs of chorea if we consider the characteristics of the true choreic movements. Choreic movements in chorea minor are never confined to one part of the body throughout the disease, they may be one-sided in the beginning but they usually become general; they are never confined to synergicly associated muscle groups, they are indefinite, vary in intensity and frequently

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* From the Neurological Department of the St. Louis University School of Medicine.

occur in individual muscles; they are involuntary, spontaneous, purposeless movements; they are never imitative nor can they be imitated; they are not materially lessened, but are usually increased, by any voluntary effort to control them; they are increased in emotional states, exaggerated when the patient is in the presence of others and less when he is alone or at rest; any voluntary effort exaggerates the choreic movements and voluntary, purposeful movements usually show a variable degree of incoordination and abnormal associated movements are always present.

A study of the abnormal movements of the muscles of the face, tongue and extremities in a moderately developed case of chorea minor will show them to have the foregoing characteristics. Add to these the disturbance in general nutrition, pallor, anemia, loss in body weight; usually the slight though constant elevation in temperature, at least in the early stages; the careless, sluggish, variable attitudes; the vacant, sullen or stupid expression; the morose, depressed or irritable disposition; the flagging attention; the variable heart murmur and we have a clinical picture not to be mistaken for any other. There are other motor signs of chorea minor less constant yet having the same characteristics, such as abnormal movements of the eyeballs, due to choreic twitchings of the ocular muscles; similar movements of the laryngeal muscles in conjunction with choreic involvement of the tongue and lips rendering speech momentarily or longer indistinct, difficult or impossible and of the pharyngeal muscles affecting the swallowing act.

With the constant motor signs of chorea minor must be reckoned, though rarely mentioned, the choreic movements of the trunk and abdominal muscles and just as constant and still less frequently mentioned and nowhere sufficiently emphasized are the abnormal respiratory movements in chorea minor.

A more general recognition of the respiratory signs of chorea minor will prove a decided aid in differential diagnosis, will better enable one to recognize the milder and atypical forms of the disease and in any case will serve to make the clinical picture more complete.

In a previous paper[1] in which I was able to tabulate twenty-two differential points between chorea minor and tic, I referred to the respiratory signs of chorea as follows: "The respiratory function is often disturbed in chorea—the respirations becoming so unequal and irregular, that a normal respiratory excursion rarely occurs and the expiratory phase is often explosive."

It is the purpose of the present communication to emphasize these and other characteristics of the disturbed respiratory function:

1. By reciting my personal observations concerning certain respiratory phenomena in chorea minor.

2. By illustrating these observations, as far as possible, with several respiratory tracings from cases of chorea minor recently studied in the neurologic clinic of the St. Louis University School of Medicine.

3. By referring to the meager periodical and textbook references concerning respiratory phenomena of chorea minor.

4. By deducing from the literature, independently of my own observations and from the motor manifestations of the disease other than the respiratory, the conclusion that certain respiratory phenomena are constant accompaniments of chorea minor.

1. The Differential Diagnosis Between Chorea Minor and Tic, Med. Record., 1907.

PERSONAL OBSERVATIONS

In order that respiratory movements may be accurately observed, it is, of course, necessary that the trunk be free from all clothing and while ordinarily one may readily note the character of respiration when the patient is sitting or standing, it is desirable in chorea minor to cause the patient to lie comfortably on his back with head and shoulders slightly elevated and with the trunk and extremities postured in such positions as will afford the greatest degree of bodily relaxation. While other postures than those of complete relaxation as well as ordinary voluntary movements increase the motor disturbance in chorea minor, easy postures are essential in observing respiratory movements in this disease since they reduce the choreic movements in other parts to a minimum and thereby enable one to study better the abnormal respiratory movements.

Having rendered the patient as easy and comfortable as possible the following respiratory phenomena may be observed:

1. Irregular breathing. This is probably due to two factors: (a) Lessened amplitude in some respiratory movements and increased amplitude in others, giving one the impression that no two respiratory excursions are equal. (b) Sudden halts—cogs occurring either during the inspiratory or expiratory phases and most frequently during the latter but rarely more than one cog occurring in any phase. These do not occur in every respiratory movement but are of frequent occurrence and appear to be due to a sudden arrest of the movement in one phase by the development of an incomplete movement of the opposite phase but the original movement usually goes on to completion. These cogs render the respiratory movements distinctly jerky and may well be called choreic inspiratory and expiratory cogs. An inspiratory cog occurs most frequently near the end of expiration and an expiratory cog near the end of inspiration.

2. Now and then a sudden deep inspiration occurs far exceeding in amplitude the usual unequal inspiratory movements and is succeeded by a sudden explosive (forced) expiratory movement, the whole differing essentially from a sighing respiration by its rapidity in its every phase and by the absence of a pause at the end of expiration.

3. Relative decrease in the length of the normal expiratory phases and relative increase in the length or the so-called normal expiratory pauses: so that the time of an expiratory phase may become equal to or less than the time of an inspiratory phase and distinct pauses are of frequent occurrence at the end of expiration.

4. Sudden changes from abdominal to costal, or from costal to abdominal breathing, occur frequently, both being observed at times in a single respiratory excursion giving one the impression for the moment of a combination—a mixture of abdominal and costal breathing and the frequent impression of incoordination—a dissociation in the respiratory movements. When "pure abdominal breathing" occurs in chorea, movements of the whole chest are reduced to a minimum and when "pure costal breathing" occurs the upper abdomen remains practically motionless.

5. The respiratory rate is frequently accelerated and occasionally this may be slower than normal.

Not only may these phenomena be seen even in the mildest cases of chorea minor but one may also become aware of them by palpation and auscultation. When the cogs occur, there seems to be a sudden reversal in

the direction of the onrushing air; at any rate, at such moments the respiratory sounds cease abruptly and then begin again.

Certain of the respiratory phenomena just described are seemingly among the earliest manifestations of the disease, are prominent throughout its active stages and in many instances persist in an attenuated degree for a considerable period after the disappearance of all the general and other usually recognized motor manifestations of the disease.

Having studied in a routine way the foregoing respiratory phenomena in chorea minor for several years, it occurred to me in the Spring of 1907, that an attempt might be made to show some of these in a graphic manner—by making tracings in cases presenting themselves at the clinic. Cases seen regularly in dispensary work are usually of the milder type and it is only in such and in convalescing cases that accurate respiratory tracings are possible. When, or as long as, the twitchings of trunk, and extremity muscles are strong enough to cause movements of the trunk, accurate respiratory tracings are, of course, impossible.

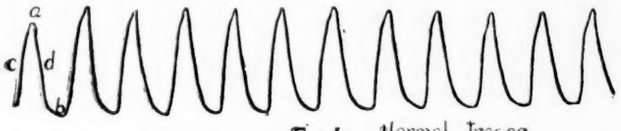

Fig 1 Normal Tracing

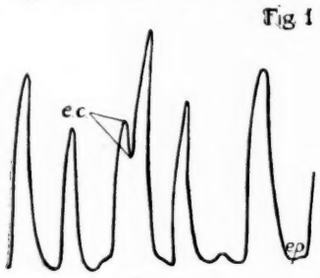

Fig 2

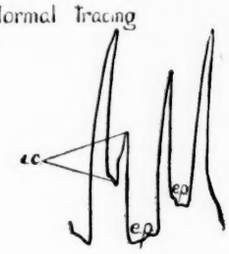

Fig 3

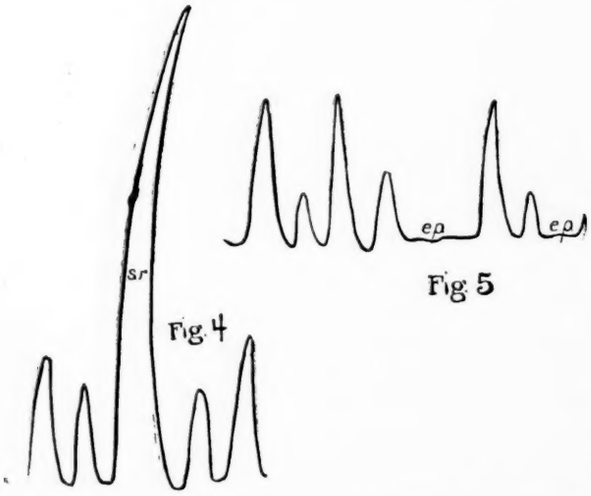

Fig 5

Fig 4

Fig. 1.—Respiratory tracing in normal individual; a, crest of wave representing end of inspiration and beginning of expiration; b, trough of wave representing end of expiration and beginning of inspiration; c, ascending limb representing the inspiratory phase; d, descending limb representing the expiratory phase; the curved line c a d represents a single respiratory cycle.

Figures 2, 3, 4 and 5 are graphic representations of respiratory tracings in chorea minor; e. c., expiratory cog; e. p., expiratory pause; i. c., inspiratory cog.; s. r., sighing respiration.

Tracings were made from six suitable cases at intervals while they were under observation at the clinic, until they were considered fully convalescent and until all of the usually recognized motor manifestations of the disease had disappeared. In four of these cases, tracings were secured three, six, seven and one half and eight months respectively after they had ceased attendance at the clinic, and since which time, in each case, the patient had been considered normal by his relatives. These had been mild cases and when the patients returned to the laboratory that tracings[2] might be made, every one, on superficial examination, appeared to be normal but closer inspection revealed in two of the patients an inconstant systolic murmur at the apex laterally and posteriorly with otherwise normal heart findings. In all there were slight rises of temperature (99 to 99.6 F.); slight fibrillary twitchings in external respiratory trunk and abdominal muscles; choreic tremor in fingers; asssociated movements in hands and disturbed respiratory function presenting some of the characteristics mentioned above.

It may be noted in passing that the persistence of such signs even in the milder cases seems to indicate, 1, that actual recovery may be long delayed in this disease, and this is probably true in the majority of cases; 2, that recurrences which so frequently take place are in reality true relapses.

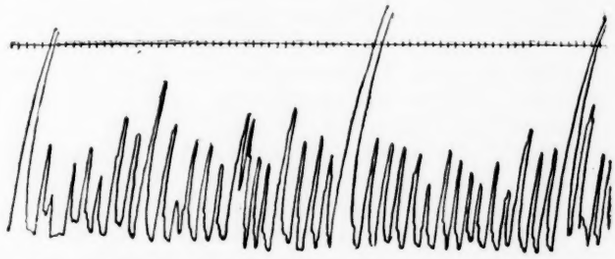

Fig. 6.—Respiratory tracing in Case 1 (J. M.), made June 6, 1907. Showing inequality of respiratory excursions, inspiratory and expiratory cogs, and frequent sighing respirations; respiratory rate 34 a minute.

RESPIRATORY TRACINGS

Before passing to a consideration of the respiratory tracings from cases of chorea minor, it will be well to consider the general characteristics of a tracing from a normal individual. In Figure 1, a tracing from a healthy boy of 11 years is shown and like all others should be read from left to right. A crest (a) represents the end of inspiration and the beginning of expiration; a trough (b) the end of expiration and the beginning of inspiration; the ascending limb (c) represents the inspiratory phase and the descending limb (d) the expiratory phase and the curved line (c a d) a single respiratory cycle.

When a healthy individual is passive and breathing quietly there is but little variability in the amplitude of inspiratory and expiratory movements, that is to say, one respiratory cycle is practically equal to another, furthermore, the expiratory phases are somewhat longer than the inspiratory phases. According to physiologists, the following proportion holds:

INSPIRATION : EXPIRATION :: 5 : 6

A difference in time between inspiration and expiration is shown in the tracing and while a continuous movement occurs in both inspiratory and expiratory limbs, the movement becomes gradually slower near the

2. The earlier tracings in all cases were made by Mr. C. H. Risser, the later ones by Mr. J. T. Swarts in the physiolog! laboratory of the St. Louis University School of Medicine and am greatly indebted to these gentlemen for their patience and great care in securing them.

end of expiration, but it does not entirely cease so that there is an apparent though not an actual pause at the end of expiration. Normally in quiet breathing only inspiration is a muscular act, expiration is purely passive, hence expiration is somewhat longer than inspiration and its ending less abrupt.

A respiratory tracing represents the movements of the chest only in one diameter and it does not, therefore, depict the respiratory movements of the whole chest but only of that part of the chest to which the transmitting tambour is applied. This fact must be kept in mind when considering the tracings from cases of chorea minor since they but imperfectly depict the abnormal respiratory phenomena so readily recognizable by other means, nevertheless, as will be seen the tracings confirm in a striking manner most of the phenomena before mentioned.

The respiratory tracings in the six cases studied show similarity, and instead of reproducing the tracings from every case, it will best serve the purpose of this communication to exhibit selected tracings from three cases at different stages of the disease. These are shown in Figures 6 to 15 inclusive. In Figures 2, 3, 4 and 5, some of the graphic representations of the respiratory phenomena in chorea minor are reproduced and a consideration of these will partly serve as a key to the tracings in Figures 6 to 15 inclusive. Brief histories of the three cases and the tracings in each case will now be considered.

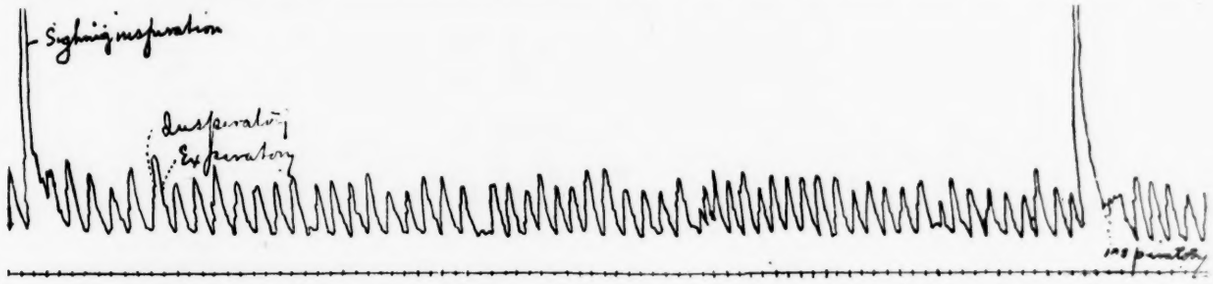

Fig. 7.—Respiratory tracing in Case 1 (J. M.), made June 15, 1907. Lessened inequality in respiratory excursions.

CASE 1.—*History.*—J. M., boy, aged 15, was suffering from respiratory (?) chorea. At no time during the course of the disease were spontaneous choreic twitchings ever prominent. These were always fibrillary and never sufficient in degree to bring about incoordination in purposeful movements and were most marked about the trunk, abdominal and thoracic muscles.

Examination.—The tongue, facial and ocular muscles were slightly involved; respiratory function was greatly disturbed and marked associated movements in face, hands and feet were present. The child was mentally morose and irritable; he had the characteristic choreic facial expression and bodily attitudes and was poorly nourished and anemic. There was an inconstant systolic murmur, rapid and variable heart rate, and the temperature ranged between 99 and 100.5 F. The patient's principal complaints were respiratory distress, loss of appetite and weakness when he first came to the clinic, April 6, 1907. He came irregularly thereafter until June 6, on which date, tracing shown in Figure 6 was made. This tracing shows great inequality in the respiratory excursions; inspiratory and expiratory cogs; frequent sighing respirations; precipitate, forced expiratory movements so that expiration and inspiration are often practically equal in time; respiratory rate 34 per minute. Absolute rest in bed was insisted on, and the patient returned to the clinic June 15 and became a bed patient in Rebekah Hospital. On this date tracing shown in Figure 7 was made. This tracing shows lessened inequality in respiratory excursions; cogs; sighing respirations, expiratory pauses and increasing ratio between inspiration and expiration, though in many of the excursions expiration is practically equal to inspiration; respiratory rate 46 per minute. Patient showed rapid improvement under rest in bed and forced feeding, and a tracing made July 8 showed only slight inequality in respiratory excursions, now and then a sighing respiration and expiratory pauses; lessening ratio between inspiration and expiration, slight cogging, respiratory rate 24 per minute. On July 25 patient showed a gain in weight of 8 pounds since entering the hospital, no fibrillary contractions noted about extremity muscles, but these were still present in a lessened degree in trunk, thoracic and abdominal muscles and rather decided choreic tremor in fingers was noted. The tracing made on this date, Figure 8, shows respiratory inequality, abortive cogs and occasional sighing respiration, decided expiratory pauses with increasing ratio between inspiration and expiration; respirations 14 per minute. The patient left the hospital August 3, fully convalescent, and was not seen again until October 22, on which date he returned to the clinic and again complained of weakness and respiratory distress. Since leaving the hospital, he had shown continued improvement, had returned to work and for about six weeks felt perfectly well. Excepting his general condition, which was still excellent, other signs of chorea minor were very similar to those noted on April 6. The tracing in Figure 9 was made October 22, and shows only slight inequality in respiratory excursions; lessened ratio between inspiration and expiration, decided expiratory pauses; and an occasional abortive cog.

Subsequent History.—Patient did not return to the clinic again, but I saw him two weeks later at the City Hospital, and the respiratory phenomena were then pronounced, choreic contractions in tongue, facial, trunk, thoracic, abdominal and extremity muscles were prominent, but not sufficient in degree to cause incoordination in voluntary movements. He left the hospital a few days later, moved to a distant city and his further history is unknown.

CASE 2.—*History.*—Wanda G., aged 13; had a very mild chorea; came to the clinic June 12, 1907. Trouble began three weeks before when changes in disposition, in ability to stand or keep still were noted by the mother. Since then she had become more fidgety, and for the past week had shown awkward movements about left upper and lower extremities.

Examination.—She had the choreic expression and attitudes; there were slight involvement of face and tongue; dilated pupils; recent emaciation; anemia; spontaneous choreic contractions about hip and shoulder girdle, lower and upper extremity muscles on the left and abdominal, trunk and thoracic muscles on both sides. Any voluntary movement caused increased spontaneous movements and slight incoordination; marked associated movements about face and left extremities; respiratory movements choreic in character; temperature 99.5 F., pulse 108, slightly variable rate, inconstant systolic murmur. The spontaneous choreic contractions were so slight as in no way to interfere with graphically recording the respiratory signs and the tracing shown in Figure 10 was made. This tracing shows inequality in respiratory excursions; sighing respirations; respiratory cogs; expiratory pauses and lessened ratio between inspiration and expiration; respirations about 19 per minute. Absolute rest in bed was advised, but as this could not be well carried out at home, patient entered Rebekah Hospital on June 19, where rest in bed and forced feeding were instituted. Rapid improvement

was noted, and she was discharged from the hospital, July 22, fully convalescent. The tracing shown in Figure 11 was made on June 19, after six days' rest in bed at home. This tracing shows respiratory inequality; sighing respirations; expiratory pauses; and increasing ratio between inspiration and expiration when compared with Figure 10; respirations 28 per minute. A tracing made July 1, twelve days after entering the hospital, showed slight inequality in respiratory excursions; infrequent cogs; expiratory pauses; and in many expiratory excursions the ratio between inspiration and expiration was practically normal. Another tracing made three weeks later showed slight inequality in the respiratory excursions; one distinct and many abortive cogs, with practically normal ratio between inspiration and expiration; respirations 20 per minute.

Subsequent History.—The patient after leaving the hospital was not seen again until March 7, 1908, about seven and one-half months after convalescence had seemed to be fully established. She had felt well and had been working at sewing in the interim. The tracing shown in Figure 12 was made March 7, 1908, and shows that respirations were still not quite normal as indicated by a sighing respiration; inspiratory and expiratory cogs, but the respiratory movements are practically normal as regards amplitude and ratio between inspiration and expiration.

CASE 3.—*History.*—Martha D., aged 11; had a mild chorea and came to the clinic June 21, 1907. Her mother stated that two months ago the girl became irritable, fidgety, complained

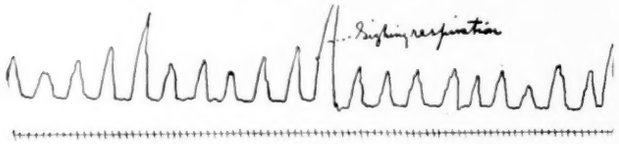

Fig. 8.—Respiratory tracing in Case 1 (J. M.), made July 25, 1907. Respirations 14 a minute.

Fig. 9.—Respiratory tracing in Case 1 (J. M.), made Oct. 22, 1907. Nearly normal but showing an occasional abortive cog.

of loss of appetite, and for about one month she had dragged her left leg peculiarly in walking and refrained from using her left upper extremity.

Examination.—Patient was well nourished; visible mucous surfaces pale; choreic expression and attitudes; frequent shifting, wiggling movements of trunk when standing. There was slight choreic involvement of face and tongue and spontaneous movements about the hip, shoulder girdle and muscles of upper and lower extremities on the left, most marked proximally; similar movements of trunk, abdominal and thoracic muscles on both sides. Any voluntary movement with left extremities increased the spontaneous movements, and at such times slight incoordination occurred. There were marked associated movements in face and left extremities; choreic respiratory movements; temperature 99.5 F., pulse 90, slightly variable in rate, and occasionally a soft systolic murmur could be heard best at apex. The spontaneous movements about extremities and trunk were insufficient in degree to interfere with a graphic representation of respiratory movements, and the tracings shown in Figure 13 were made three days later. This shows great irregularity in respiratory excursions; frequent sighing respirations; inspiratory and expiratory cogs; expiratory pauses; decreased ratio between inspiration and expiration; at times purely abdominal breathing; respirations 24 per minute. The tracing shown in Figure 14 was made July 1, 1907, after one week's rest in bed at home. This tracing shows inequality in the respiratory excursions; frequent cogs; sighing respirations; slight expiratory pauses; and in many excursions lessened ratio between inspiration and expiration. Respirations 28 per minute. A tracing made one week later showed great irregularity in the respiratory excursions; cogs; distinct expiratory pauses; increasing ratio between inspiration and expiration; respirations 26 per minute. The tracing shown in Figure 15 was made July 27, 1907, and indicates slight inequality in the respiratory excursions; cogs; expiratory pauses; and in many excursions the expiratory ratio is practically normal. At the time this tracing was made, the patient seemed fully convalescent. The choreic expression, attitudes and incoordination had entirely disappeared.

Subsequent History.—On request, she returned to the clinic March 7, 1908, and the mother stated that the girl had seemed to be normal in every way since her last visit to the clinic; that she had made a good record in school and no complaint had been made by the teacher. The tracing made on this day was practically that of a normal individual as far as amplitude, respiratory excursions and ratio are concerned; it differed from that of a normal individual only in the occasional occurrence of cogs.

All of the respiratory phenomena before mentioned are graphically demonstrated in the tracings from the three cases excepting "the mixture of costal and abdominal breathing as occurring in a single respiratory cycle" and "the dissociation in the respiratory movements." These could not be graphically shown without

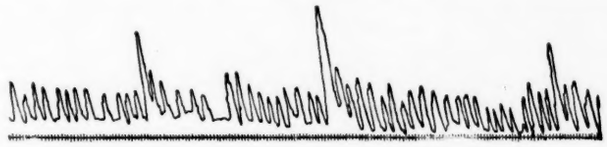

Fig. 10.—Respiratory tracing in Case 2 (Wanda G.), made June 12, 1907. Showing inequality in respiratory excursions, sighing respirations, respiratory cogs, expiratory pauses and lessened ratio between inspiration and expiration; respirations about 19 a minute.

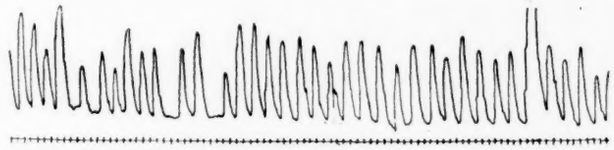

Fig. 11.—Respiratory tracing in Case 2 (Wanda G.), made June 19, 1907, after six days rest in bed. Respirations 28 a minute.

recording the respiratory movements of two or more diameters of the chest at the same time and I hope to be able to do this later. Without attempting to offer an explanation, just now, for the respiratory phenomena in chorea minor, let us for the moment consider the literature bearing on disturbed respiratory function in this disease.

LITERATURE ON DISTURBED RESPIRATORY FUNCTION IN CHOREA MINOR

A consideration of the literature will show that the majority of authors writing on chorea do not even refer to its respiratory signs and those who do, make only meager references and there is a wide diversity of opinion among them. I have been unable to find a single reference concerning the easily recognized respiratory signs of chorea minor in recent periodical literature and no one to my knowledge has ever emphasized their importance in diagnosis. Following is a series of quotations, the earliest reference I have been able to find being by John Eberle:[3]

EBERLE: "Respiration is often anxious and irregular; the voice is altered and articulation is indistinct and stuttering."

ROBLEY DUNGLISON:[4] "The articulation is also affected at times so as to occasion stammering, and occasionally the respiratory muscles and those concerned in deglutition are implicated."

3. A Treatise on the Practice of Medicine, 1841.
4. Practice of Medicine, 1842.

ROMBERG[5] cites three cases in which respiratory function was profoundly affected, and states that the internal and external muscles of respiration are rarely affected.

GERHARDT:[6] "The movements occur in voluntary muscles excepting those of respiration."

MEIGS AND PEPPER:[7] "The muscles of the external and internal respiratory apparatus are rarely affected."

S. JACCOUD:[8] "The respiratory muscles, those of the larynx, those of the pharynx and sphincters ordinarily escape."

VON ZIEMSSEN[9] seems to have been the first to have paid particular attention to the disturbed respiratory function in chorea. He calls attention to the fact that "the participation on the part of the vegetative muscular system is generally denied or is regarded as very rare, but the facts which favor this view are too ambiguous to permit of such interpretation. In the case of such automatic actions as the respiration in which the will is capable of influencing the rapidity and rhythm of the movements, irregularities are often observed in the act whether of inspiration or expiration which can only be interpreted as choreic."

VON ZIEMSSEN was the first to observe chorea of the laryngeal muscles, of which no cases had been published up to that time. This he found to be "a usual accompaniment of the severe form of the disease and characterized by insufficient force and duration of the tension of the vocal cords in phonation, owing to a want of coordination and persistence in the muscular act. With the laryngoscope it is very easy to watch the restlessness of the laryngeal muscles, the twitching contractions of the closers, openers and tensors of the cords."

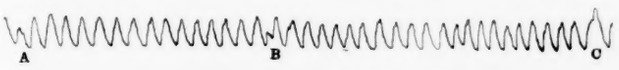

Fig. 12.—Respiratory tracing in Case 2 (Wanda G), made March 7, 1908. A, inspiratory cog; B, expiratory cog; C, sighing respiration. Respirations, 17 a minute.

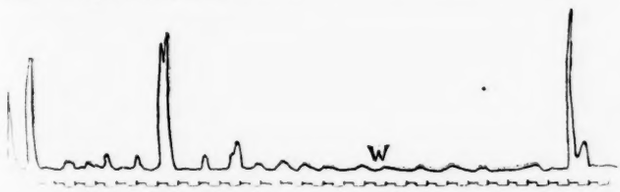

Fig. 13.—Respiratory tracing in Case 3 (Martha D.), made June 24, 1907. Great irregularity in respiratory excursions; frequent sighing respirations; inspiratory and expiratory cogs; expiratory pauses; decreased ration between inspiration and expiration; purely abdominal breathing (w) at times; respirations 24 a minute.

ALTHAUS:[10] "The patient can not sing because respiration is jerky and explosive, the air is not properly husbanded, and though great effort is made, there is no result but fatigue from excessive disorder in coordination of the muscles. That the diaphragm and abdominal muscles suffer is shown by unequal and irregular respirations."

BRISTOWE:[11] "The difficulty in speech depends not infrequently on the spasmodic affection of the larynx and respiratory muscles which compels him to draw his breath suddenly through the laryngeal orifice with a strained sound. In some cases, even when no attempt at speech is being made, odd croaking, grunting sounds are thus from time to time produced."

ROSENTHAL:[12] "The respiratory movements are irregular; speech is embarrassed and the pulse is often accelerated. These phenomena are due to the spasmodic action of the muscles, of respiration of the larynx, pharynx and perhaps also of the heart."

WILLIAM A. HAMMOND:[13] "Respiration is imperfect."

TROUSSEAU:[14] "Strange sounds are occasionally produced through the voice coming out in inspiration instead of expiration. While the patient expires in the act of speaking, the inspiratory muscles suddenly contract convulsively and cause the air to rush into the larynx so that from this kind of antagonism between the mind that wills the speech and the inspiratory muscles the voice undergoes a strange alteration."

W. H. BROADBENT:[15] "In the mildest forms the diaphragm and muscles of the chest and abdomen are affected, causing irregularity in respiration."

ROBERTS:[16] "Respiratory movements are infrequent, jerky and irregular, the natural relations of the abdominal and thoracic movements being perverted during breathing; sometimes there is a dry nervous cough or grunting sound. It does not often happen that the muscles of the trunk seem to be much affected, but choreic patients are usually unable to sit or lie quietly for any length of time. The muscles of larynx are rarely implicated, those of the pharynx never."

WEBBER:[17] "Respiration in severe cases is sometimes affected, acquiring a jerky character."

JAMES ROSS:[18] "The respiratory rhythm becomes irregular and jerky, and in laryngoscopic examination the vocal cords have been observed to act in an irregular and disorderly manner."

VOGEL:[19] "The body is turned about and twisted in every direction. The respiratory muscles, however, do not participate in the jactitation; at least the inspirations are not executed irregularly."

M. ALLEN STARR:[20] "Occasionally the laryngeal and respiratory muscles are affected and noises are made in the throat."

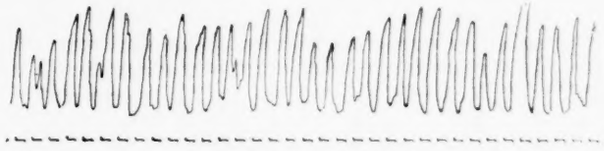

Fig. 14.—Respiratory tracing in Case 3 (Martha D.), made July 1, 1907, after one week's rest in bed. Respirations 28 a minute.

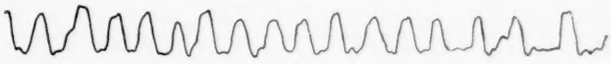

Fig. 15.—Respiratory tracing in Case 3 (Martha D.), made July 27, 1907. Respiratory ratio practically normal; respirations 14 a minute.

WHARTON SINKLER:[21] "The muscles of respiration, especially the diaphragm, are sometimes also affected, as well as the voluntary muscles. The respirations are irregular, sometimes short, sometimes deep, with occasionally a few rapid, shallow respirations, and then a long sighing respiration."

J. LEWIS SMITH:[22] "In rare instances chorea affects respiratory muscles so as to produce a peculiar involuntary barking or squeaking voice by the forcible expulsion of air over the tense vocal cords."

WOOD AND FITZ:[23] "The respiratory muscles are the last to be affected, but cases have been reported in which hiccough, crowing inspirations, irregular respiration and other evidences of choreic action of the respiratory muscles were abundantly present."

CH. FERE:[24] "The contortions of the features are associated with disturbance of speech; the articulation is hesitating or stuttering unless there is complete glossoplegia; the sounds are emitted by jerks and are often cut short by short intonations and noisy explosions. Singing becomes impossible be-

5. Manual of Nervous Diseases, ii, 1853.
6. Lehrbuch der Kinderkrankheiten, 1866.
7. Practical Treatise on the Diseases of Children, 1870.
8. Traité de pathologie interne, ed. 3, 1873.
9. Encyclopedia, xiv, 1877.
10. Diseases of the Nervous System, 1878.
11. Treatise on the Theory and Practice of Medicine, 1879.
12. Clinical Treatise on Diseases of the Nervous System, ii, 1879.
13. Treatise on Diseases of the Nervous System, 1881.
14. Lectures, I, 1882.
15. Chorea, in Quain's Dictionary of Medicine, 1883.
16. Theory and Practice of Medicine, 1884.
17. Nervous Diseases, 1885.
18. Hand-book of the Diseases of the Nervous System, 1885.
19. Diseases of Children, 1890.
20. Chorea, in the American Text-Book of the Diseases of Children, ed. by Louis Starr, 1894.
21. Chorea, in A Text-book of Nervous Diseases by American Authors, ed. by Dercum, 1895.
22. Diseases of Children, 1896.
23. Practice of Medicine, 1897.
24. Spasmodic Neuroses, Twentieth Century Practice, ed. by Stedman, x, 1897.

cause the patients are incapable of regulating or sustaining the expiration. Digestive and respiratory functions are disturbed by the movements of the thoracic muscles."

C. E. BEEVOR:[25] "The muscles of the trunk become affected, causing the patient to rock about while standing up, and the respiratory muscles may act irregularly."

WOLLENBERG:[26] "Speech is in some degree in all cases disturbed, partly due to functional disturbance in the glottis and abdominal muscles. The involvement of the latter is shown plainest in the unequal and jerky expiratory movements (von Ziemssen), in consequence of intermitting expiratory pressure the patient can only enunciate a few syllables or perhaps only one, and then a deep and hasty inspiration occurs. In other cases syllables or numbers are forcibly enunciated in consequence of the explosive contractions in the abdominal muscles. Inspirations, by stronger involvement of the respiratory muscles, especially the diaphragm, are irregular, now superficial, now deep, and between the respiratory phases pauses occur of variable length."

SACHS:[27] "In some a peculiar condition of speech occurs which is in part due to difficulties in articulation and in part to choreic movements in respiratory muscles necessitating rapid breathing."

POTTS-GALLANDET:[28] "The muscles of respiration, especially the diaphragm, are sometimes affected, causing irregular respirations, sometimes shallow, sometimes deep, with occasionally a few rapid, shallow respirations and then a long sighing one."

J. RISSIEN RUSSELL:[29] "The movements of the thorax in respiration are also made disorderly, chiefly owing to the implication of the diaphragm. Inspiratory efforts do not occur in any regular order, either as regards time or depth of movement; thus irregular pauses intervene and one inspiration is deep, perhaps excessively so, while another is shallow or abortive. Incoordination of respiratory movements sometimes shows this in alternation between abdominal and thoracic respiration."

FREDERICK TAYLOR:[30] "In the trunk there are irregular contractions of the thoracic and abdominal muscles and of the diaphragm. The trunk may be twisted around to one or the other side. Respiration is gasping or jerky from sudden descent of the diaphragm or from quick contractions of the abdominal muscles. Speech is irregular and badly sustained and the patient can not sing a long note. This is no doubt largely due to the imperfect action of the respiratory muscles."

TAYLOR AND WELLS:[31] "Speech is often defective (dysarthria), due to choreic action of the muscles used in articulation and also in respiration."

A. McL. HAMILTON:[32] "The patient breathes in a catchy, quick way, and if the body be stripped it will be found that the action of the intercostals is uneven."

W. v. LUEBE:[33] "In contrast to the voluntary muscles, the musculature of heart, bladder and rectum, as well as respiratory and pharyngeal muscles are not involved."

W. A. GOWERS:[34] "The muscles of respiration, especially the diaphragm, frequently share the irregularity observed in the action of the more strictly voluntary muscles; the respirations are unequal; deep and shallow breathing alternates or deep breaths are separated by pauses; thoracic and abdominal breathing may alternate irregularly."

DANA:[35] "The muscles of respiration may be involved so that the rhythm is uneven."

BUTLER:[36] "The speech is indistinct, confused and difficult, and the muscles of respiration may be affected."

FÖRSTER:[37] In severe cases the arms and legs are tossed about, the trunk writhes, the head moves from side to side, the eyes show jerking movements, gasping, inspiratory movements, explosive, writhing or snoring expiratory movements, inarticulated clucking and groaning sounds follow one another in irregular order."

B. K. RACHFORD:[38] "The diaphragm and other respiratory muscles may be occasionally affected, producing irregularity and loss of rhythm of respiratory movements."

HALBERT:[39] "Respiration may be involved when diaphragm and thoracic muscles are involved."

OPPENHEIM:[40] "The respiratory muscles are generally affected, especially the diaphragm; irregular, spasmodic breathing occurs."

H. A. HARE:[41] "The child also frequently gives vent to curious guttural or smacking sounds, due to the action of the muscles of the mouth, pharynx and tongue. These sounds may also be increased by spasms of the diaphragm."

ASHBY AND WRIGHT:[42] "The muscles of respiration do not escape; the child taking a deep sighing inspiration, then perhaps there is a series of shallow irregular respirations."

JAMES TAYLOR:[43] "Irregularity of respiratory movements are conspicuous and spasmodic movements occur. The breath is often taken in rapidly and held for some time, then let go with a loud sigh. The trunk is always involved to some extent, and movements of a writhing nature are characteristic."

J. H. MUSSER:[44] "They may involve the muscles of the face, the arm, the leg or the muscles of the trunk, particularly the diaphragm, giving rise to an irregular jerking inspiration."

T. K. MONRO:[45] The respiratory muscles . . . contract suddenly and irregularly. Speech is often impaired, due to the involvement of the muscles of articulation and respiration, and possibly also to an involvement of the larynx. Speech is apt to be uttered quickly and to be interrupted."

OSLER:[46] "In severe cases the child will make no attempt to speak. The inability to speak is in articulation rather than in phonation. Paroxysms of panting and of hard expiration may occur, or odd sounds may be produced."

FERDINAND FRÜHWALD:[47] At first the twitchings are of short duration; soon, however, they increase in intensity, and in severe cases involve also the lower extremities, the muscles of the tongue and pharynx and rarely the diaphragm."

CHURCH AND PETERSON:[48] "The muscles of the trunk and neck do not escape, and may cause nodding and bendings that are often most apparent when the patient is seated. The diaphragm and thoracic muscles are commonly invaded, causing irregularity of respirations and sometimes spasmodic noises, or . . . peculiar involuntary clucking or smacking sounds."

EDWARDS:[49] "Speech is quicker than normal, and may be aggravated by irregular movements of the glottis and respiratory muscles, resulting in panting, irregular inspiration or expiration or sobbing sounds in which the diaphragm participates."

FRENCH:[50] "The muscles of the diaphragm may be involved, indicating difficulty and irregularity of respiration."

D. J. MCCARTHY:[51] "In severe chorea, the movements become much more marked, the respirations become jerky and irregular, the heart action irregular, and the child speaks only with difficulty and with an accentuation of the movements, or at times is unable to speak at all."

TYSON:[52] "Speech is affected sooner or later in one-fourth of the cases, but the extent varies greatly from slight hesitancy to incoherent, the difficulty being in the muscles of articulation rather than in phonation."

L. G. GUTHRIE:[53] "Speech is frequently indistinct and impossible from incoordination, coordination and spasm of muscles concerned in articulation and respiration."

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26. Chorea Paralysis Agitans Para Myoclonus Multiplex, Vienna, 1899.
27. Treatise on the Nervous Diseases of Children, 1900.
28. Nervous and Mental Diseases, 1900.
29. Chorea, Clifford Allbutt's System of Medicine, vii, 1900.
30. Chorea, in Practice of Medicine, ed. by Gibson, 1900.
31. Manual of Diseases of Children, 1901.
32. Reference Hand-Book of Medical Sciences, 1901, ed. 2.
33. Specielle Diagnose der inneren Krankheiten, ii, 1901.
34. Manual of Diseases of the Nervous System, 1901.
35. Text-Book of Nervous Diseases and Psychiatry, 1904.
36. Diagnostics of Internal Medicine, 1904.
37. Das Wesen der choreatischen Bewegungsstorung. Samml. klinische Vortr., 1904.
38. Neurotic Disorders of Childhood, 1905.
39. Practice of Medicine, 1905.
40. Lehrbuch der Nervenkrankheiten, ed. 4, 1905.
41. Text-Book of the Practice of Medicine, 1905.
42. Diseases of Children, 1905.
43. Nervous Diseases in Childhood, 1905.
44. A Practical Treatise on Medical Diagnosis, ed. 5, 1905
45. Manual of Medicine, 1906.
46. Practice of Medicine, ed. 6, 1906.
47. Handbook of the Diseases of Children, ed. by Wescott, 1906.
48. Nervous and Mental Diseases, 1906.
49. Practice of Medicine, 1907.
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51. Chorea, Practice of Pediatrics, ed. by Carr, 1907.
52. Practice of Medicine, ed. 4, 1907.
53. Functional Nervous Disorders in Childhood, 1907.

DEDUCTIONS FROM THE LITERATURE AND FROM THE MOTOR MANIFESTATIONS OF THE DISEASE OTHER THAN THE RESPIRATORY. EXPLANATION. CONCLUSION

If we contrast the statements of those who say specifically that the respiratory muscles are not involved in chorea and of those who say "rarely," "occasionally," "in severe cases," "frequently," "generally," with those who regard disturbed respiratory function as a constant accompaniment of the disease, the conclusion becomes inevitable that the difference in opinion is due to the varying degree of attention heretofore given respiratory signs of chorea. We are warranted, therefore, in drawing this conclusion if we remember that the majority of authors writing on chorea do not even refer to its disturbed respiratory function and that the reason for this fact is certainly not to be found in the nature of the disease but rather in the lack of attention to its respiratory phenomena.

A consideration of the literature, therefore, warrants the conclusion that certain respiratory phenomena are among the constant signs of the disease. This conclusion finds confirmation in the motor manifestations of the disease other than the respiratory. The involvement of the trunk and abdominal muscles are among the earlier manifestations of the disease and among the last to disappear. In early and active stages, the careless, sluggish variable attitudes and shifting, writhing movements of the trunk are due to the spontaneous choreic contractions in these muscles. Careful inquiry concerning the first change noted will elicit statements of sluggish, variable attitudes—"inability to keep still," etc. Inspection of the naked trunk during the early and active stages of the disease will show that the variable attitudes are incident to, or immediately follow, visible and palpable contractions in the muscles just mentioned. After the disappearance of all the general and the usually recognized motor manifestations of the disease, contractions in an attenuated degree persist in these muscles and are among the last of the motor phenomena to disappear. There is unanimity concerning the involvment of the trunk muscles in severe chorea but wide divergence of opinion concerning such involvement in mild cases and the period of the disease when such involvement occurs. The consensus of medical opinion at the present time concerning these points is summed up by Förster as follows:

> **It is interesting to note the extension of choreic movements with the development of the disease. While in the beginning only the distal parts of the extremities, the fingers and toes are involved, the order of extension of the spontaneous movements is proximal; the hand, forearm, arm, shoulder and foot, leg, thigh, trunk are involved one after the other. The more severe the case the more the proximal parts are involved, the milder the case, the more the spontaneous movements are confined to the distal segments.**

This is not the place to dwell on the order of development of choreic movements, though my personal observation of cases seen in the earlier stages and studied throughout their course would cause me to give just the reverse order of development to that outlined by Förster. That the trunk muscles are involved more or less in all cases of chorea, the degree depending on the severity of the disease, is a point I desire to establish and emphasize. I have paid especial attention to this point in my studies in chorea minor and my observations find confirmation in the writings of von Ziemssen, Broadbent, Vogel, Frederick Taylor, Church and Peterson James Taylor, C. E. Beevor, and others.

Now if we admit the involvement of the trunk and abdominal muscles even to a slight degree in chorea minor, we must then admit the possible, nay more, the necessary, involvement of some of the respiratory muscles. This follows from the fact that all of the respiratory muscles, excepting those innervated by the seventh, tenth and eleventh cranial nerves, are innervated by the spinal nerves having a common source of innervation with the trunk, abdominal and extremity muscles in the anterior horn cells. That the muscles innervated by the seventh and eleventh cranial nerves are constantly involved to some degree in chorea is a matter of general observation and acceptance and the frequent involvement of the vocal cords is generally admitted. Therefore, unless we assume that the respiratory muscles escape in some inexplicable way, we are forced to admit their constant involvment in chorea minor.

Admitting then the involvement of the respiratory muscles in chorea, can we explain the respiratory phenomena recorded in this paper, and most of them illustrated in the tracings by the spontaneous choreic contractions in the respiratory muscles? Some of them can be explained in no other way and these are the "inspiratory and expiratory cogs," whereas the active and explosive expiratory movements, the expiratory pauses, the sighing respirations, the sudden changes in type, the mixture of types, the incoordination—dissociation and the variable amplitude of the respiratory excursions admit of no such explanation. To explain these, we must assume an irritation or fatigue, and probably both, of the respiratory center itself by the agent causing chorea. The principal respiratory center is in the medulla and is situated between the nuclei of the eleventh and twelfth cranial nerves below and the seventh above, and it would indeed be an inexplicable condition if the respiratory center escaped.

From the beginning, and ever afterward in health, our respiratory movements are associated, synergic and coordinated. The normal individual is incapable of executing other than coordinated respiratory movements. However much he may voluntarily alter their rhythm or however much their rhythm may be altered, as in emotional states, in the beginning of any voluntary, purposeful movement, or reflexly as in coughing and sneezing, there is still harmonious, synergic, coordinating activity exerted by the respiratory center over the muscles engaged in the respiratory act.

We readily account for the Cheyne-Stokes' respiration; the disturbance in respiration frequently met with in inflammatory processes of the brain or its membrane; in tumors, abscesses, traumatisms, shock, insolation; in fevers; in infectious diseases; in intoxications; in the action of drugs, etc., by assuming an involvement in some way of the respiratory center. When we consider the anatomic location of the respiratory center, the physiology of respiratory movements, the motor manifestations of chorea minor other than the respiratory and lastly the respiratory phenomena themselves, the conclusion becomes inevitable that most of them can be explained in no other way than in assuming an involvement of the respiratory center by the agent causing chorea minor.

ABSTRACT OF DISCUSSION

DR. FRANK R. FRY, St. Louis: I believe that Dr. Graves brought out an important point. There are occasional instances in which we have misgivings about cases of chorea,

and anything that assists in their diagnosis is welcome and helpful.

DR. L. H. METTLER, Chicago: We still find that clinical differentiations between this and the ties and certain choreiform manifestations are based to a considerable degree on the localization of the symptoms. We are told often that chorea minor involves especially the peripheral extremities, whereas the ties are more obvious about the face and head, as though that were an important element of distinction. In some old definitions and even in some modern definitions we are informed that chorea minor implicates the voluntary muscles; and the movements are spoken of as remarkable for being involuntary, yet associated with the voluntary parts of the body. The suggestions of Dr. Graves as to the respiratory movements show that the disease is a much wider affection than these clinical differentiations would lead us to suppose.

I have long been teaching that the sensory manifestations, the mental manifestations, as well as the more prominent motor manifestations involving the different parts of the body, point to the fact that chorea minor is something more than a mere cortical trouble, and that the clinical physiopathology of the disease carries us back to what most of us are beginning to recognize, and which ere long all of us will recognize, that we have here a generalized infective process, whether rheumatic or otherwise, and that this infection involves more or less all of the functions of the body, manifesting itself only more prominently in certain ways, as Dr. Graves has brought out. I think that these investigations clearly show us that in this infective process we have a disease which involves more or less the entire nervous system in all of its various functions, and not alone the mere motor areas. Particular parts of the motor function we have, even to the present time, been regarding too narrowly because they were merely most prominent clinically.

DR. WILLIAM W. GRAVES, St. Louis: I fully agree with Dr. Mettler that in chorea minor we are dealing with a disease of rather widespread irritative nature. I believe a study of its respiratory phenomena will emphasize that which now is generally recognized, that chorea minor is really a disease, due to an infectious agent, though not definitely known, as measles, smallpox, scarlet fever or other infectious disease. The entire clinical history of the disease points to this conclusion.

LACTIC ACID AS AN AGENT TO REDUCE INTESTINAL PUTREFACTION

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In a book recently published and entitled "The Prolongation of Life," Optimistic Studies by Elie Metchnikoff, the author has made an attempt to analyze the causes of premature senility. The origin and uses of the large intestine are discussed and an attempt made to account for its purpose. The author argues that protection is afforded to animals which are frequently compelled to make a hasty escape from enemies by allowing the waste products of digestion to accumulate without the necessity of immediate discharge. He seeks to prove this theorem by a number of examples. Birds have neither a large intestine nor a bladder and therefore are unable to retain waste products. Exception to this rule is the ostrich, which, not being able to fly, has developed a large intestine so as to be enabled to continue a lengthy flight. Mammals have, as a rule, a large intestine because their terrestrial habits of life make it expedient for them to protect themselves by flight from some sudden enemy.

THE COLON AND LONGEVITY

Metchnikoff then quotes examples of short-lived mammals. The horse, for instance, has a huge large intestine in which waste products accumulate and the discharges are often the results of food taken several days previously. The same applies to sheep and cattle. All these animals, according to their size, seem entitled to longer lives than they actually possess. On the other hand, birds of prey which live largely on putrefying meat show a small intestinal flora of bacteria, because, as Metchnikoff reasons, there is no intestinal sac in which food wastes accumulate and these animals have consequently long lives. It has been supposed by some authors that an exclusive vegetable diet is not productive of intestinal putrefaction and that putrefaction is due to a meat diet. This may be true in a measure and under certain conditions. Metchnikoff thinks, however, that intestinal putrefaction is primarily due to the presence of a large intestine, and that premature senility is the result of the accumulation of waste products which remain for varying lengths of time in the colon and are there subject to the activity of putrefactive bacteria.

Herter agrees with the view that premature senility is due to putrefaction caused by the activity of anaërobes, chiefly *B. aërogenes capsulatus (B. Welchii)*. The character of the food influences the intestinal flora, causing differences not only in number but in kind. In infants fed exclusively on human milk an anaërobic bacterium described by Tissier (*B. bifidus*) is present in large numbers, especially in the upper part of the intestinal canal. This organism produces too much acid for most bacteria to live in and affords protection against bacteria in general, and especially against pathogenic and putrefactive bacteria, which thrive best in alkaline media.

In the intestines of infants fed on cow's milk, on the other hand, several species of anaërobic bacteria find suitable conditions for development. These bacteria break down proteins with the production of substances which may become injurious to the system, especially if they are allowed to accumulate by large amounts of protein-containing food reaching the colon.

INTESTINAL FLORA

In adult life few bacteria of any kind are found in the normal stomach, being promptly killed by the hydrochloric acid of the gastric juice. In the duodenum there are few, in the jejunum more, and in the colon almost countless numbers. The distribution of *species* also varies according to locality. Aërobes and streptococci are chiefly found in the upper parts of the intestines, but in the colon we find in addition large numbers of anaërobes which are practically absent in the higher intestine. The anaërobes can only thrive after the free oxygen is used up by the aërobes, and if undigested protein reaches the colon they find there favorable opportunity to elaborate from it the poisonous products of putrefaction.

The presence of acid is unfavorable to the growth of putrefaction bacteria, and it is believed that streptococci and bacteria of the colon aërogenes group serve a useful purpose by the acid they produce and by using up material on which the anaërobic bacteria might thrive. The streptococci exercise an inhibiting influence on bacteria of the colon aërogenes group. The whole question of the usefulness or uselessness of bacteria in the digestive tract is still debated, though most authorities seem to agree that the production of acids in the digestive tract is of distinct value.

A proper balance of carbohydrates and proteins, the use of only a moderate amount of protein, the avoid-

ance of imperfectly-cooked meat, and thorough mastication tend to prevent putrefaction. Acids have been employed as remedies for intestinal putrefaction, but it is difficult to administer them in sufficient amounts to serve the purpose without causing injury by the neutralization of alkali. Intestinal antiseptics are of doubtful efficacy.

LACTIC ACID AND INTESTINAL PUTREFACTION

In his book on the prolongation of life Metchnikoff advises strongly the ingestion of lactic acid bacteria for the prevention of intestinal putrefaction. Food has been preserved empirically from remote times by various means, one of these being the use of sour milk. The introduction of lactic acid bacteria has been attempted by various authors, some claim with eminent success. Thus Cohendy took cultures of a bacillus isolated from the Bulgarian fermented milk Yahourth or Yoghurt and reduced intestinal putrefaction materially. He found the Bulgarian bacillus in the feces for several weeks after discontinuing ingestion. Tissier employed cultures of Kozai's *B. acidi paralactici* with success. Herter has fed dogs with cultures of *B. coli* and *proteus* and found that putrefactive products increased in the urine. When feeding cultures of lactic acid bacilli, however, he found a reduction. Professor Herter has kindly informed me in a private communication that the lactic acid bacilli used in these experiments were not of the Leishmann type (*Strept. lacticus*) but probably Hueppe's *B. acidi lactici*.

The bacillus recommended by Metchnikoff and named by him *B. bulgaricus* has been studied in his laboratory by Bertrand and Weisweiler. They found that it produces an unusual amount of lactic acid, more in fact than is pleasant to taste. Metchnikoff's bacillus also digests the casein somewhat and decomposes some fat so that the taste is disagreeable. Therefore Metchnikoff advises the use of the paralactic bacillus (*Strept. lacticus*) in combination with the Bulgarian bacillus.

Recently Herter and Kendall have investigated the fate of *B. bulgaricus* in a monkey. They fed a monkey with bacillac, a beverage produced from milk with *B. bulgaricus* and a yeast. By feeding them this milk exclusively they were able to maintain an acid reaction throughout the digestive tract. They failed, however, in establishing the predominance of the Bulgarian bacillus in the ileocecal region. In the large intestine the number of these bacilli was relatively small. "Thus in the region characterized by most active putrefaction the lactic acid bacilli failed to establish themselves in relatively large numbers." The authors assume that the introduction of lactic acid bacteria appears to reinforce the enfeebled action of the normal intestinal lactic acid bacteria and to increase the amount of acid produced where it is insufficient or to reintroduce it where it is absent, thus assisting the host to throw off "wild races" of bacteria that may have become habituated in the intestinal tract.

Wegele has obtained good results by the use of Metchnikoff's sour milk. He thinks that the production of lactic acid *in statu nascendi* in the digestive tract is of importance more than the mere presence of lactic acid after consuming sour milk.

Wejnert claims that the number of bacteria in the feces is markedly reduced by the use of sour milk prepared with lactobacilline (*B. bulgaricus, Strept. lacticus* and a yeast). He stated that this reduction is more marked by using this milk than by using ordinary sour milk. The evidence is not convincing, and since anaërobic bacteria were not searched for in his experiments the benefit claimed has not been sufficiently substantiated. He found *B. bulgaricus* in the feces but did not state what relation the numbers bear to the number of other bacteria in the feces.

We have seen that in order to produce lactic acid it is necessary to have carbohydrates present. We must remember that many bacteria are able to produce lactic acid from sugars, some species producing but small amounts, others larger amounts and some produce other acids than lactic acid. Lactic acid up to 1 per cent. in milk is palatable and pleasant, but if mixed with volatile acids, such as acetic, formic acid, etc., the taste becomes unpleasant. It is of importance, therefore, to select the kind of lactic acid bacteria with care. *Strept. lacticus,* the organism responsible for the natural souring of milk, produces about the right amount of palatability. In fact milk which has reached the stage of extreme activity of this organism is eaten by many people as a delicacy. When milk has solidified from the coagulation of the casein brought about by *Strept. lacticus* it contains these bacteria in almost pure culture and the lactic acid present is almost pure lactic acid. If milk is kept longer than this, molds decompose the casein, bringing about an alkaline reaction, so that putrefactive bacteria can multiply and putrefy the milk.

BUTTERMILK AND ITS MANUFACTURE

Buttermilk as we procure it in the market may contain various degrees of acidity and fat. If butter is made from sweet cream the buttermilk contains very little acid. Usually butter is made from cream containing 0.6 per cent. or more acid. The amount of fat in buttermilk depends largely on the thoroughness with which the churning process is carried on. The souring of the cream previous to churning is either the natural process or is brought about by the use of starters. In the natural process *Strept. lacticus* is the usual agent producing acidity, but may fail to give good results if excessive numbers of other bacteria are present. If starters are used unpleasant flavors are avoided, especially if commercial starters are used. These consist chiefly of cultures of *Strept. lacticus,* some being actually pure cultures. The cream may be pasteurized previous to inoculation with these cultures and thus the injurious influence of foreign bacteria avoided.

Buttermilk, therefore, is sour milk from which the butterfat has been partially removed. The churning process which breaks up the coagulated casein into extremely fine particles may influence the taste and aroma somewhat. A large proportion of buttermilk is manufactured by inoculating separator milk or skimmed milk with starters and churning after coagulation. During the investigation to be discussed presently ordinary sour milk was tasted by a number of persons who knew nothing of the origin and they invariably declared that they were drinking first class buttermilk. If milk is allowed to remain at room temperature for two to three days, then thoroughly shaken, a pleasant and wholesome beverage results, if proper care is taken to obtain a good grade of milk, as personal experiments have shown.

Should milk be pasteurized or boiled if sour milk is to be prepared by introduction of pure cultures? Our experiments have shown that the cooked taste is not eliminated by bacteria and is often quite prominent if the milk has been boiled. This certainly is a disad-

vantage. Pasteurization will furnish a more palatable product than boiling. Raw milk, however, is the most palatable. Since pathogenic bacteria are often found in milk it may be safer to pasteurize the milk previous to inoculation. Pasteurization and boiling kills vegetative forms of bacteria so that pathogenic bacteria are killed, but lactic acid bacteria are killed also and have to be supplanted by artificial cultures. Pasteurized and boiled milk also contain the spores of putrefactive bacteria, which, however, are suppressed if lactic acid bacteria are inoculated in sufficient numbers. On the whole, pasteurization is to be recommended unless the milk is produced under strict hygienic precautions.

PREPARATIONS INVESTIGATED

Of late years a number of firms have manufactured and marketed preparations for the home production of soured milk. At the suggestion of the editor of THE JOURNAL of the American Medical Association, I, assisted by Mr. T. H. Glenn,[1] have investigated some of these preparations with a view of determining their relative value as starters for sour milk beverages. The preparations were purchased in the open market and samples also were obtained from the manufacturers, in order to determine their stability. Bacteriologic examinations were made from the tablet or capsule directly and also from sterilized milk inoculated with the tablet or capsule. Sour milk was prepared with the respective preparations, following the directions given in the printed pamphlets accompanying the packages. In all, six series of experiments were made by inoculation of flasks containing 500 c.c. milk with the commercial preparation:

1. Inoculation of ordinary raw milk.
2. Inoculation of certified milk, containing 1,000 to 5,000 bacteria per c.c.
3. Inoculation of boiled ordinary milk.
4. Inoculation of boiled certified milk.
5. Inoculation of milk sterilized at 120 C. (248 F.) for twenty minutes.
6. Plating in glucose agar of the commercial preparations.

The amount of acid was determined daily for three successive days of each preparation, excepting the series inoculated into sterilized milk. This series was examined on the third day only. The acidity was determined by titration with a solution of Farrington's alkaline tablets. This method is perhaps not quite as accurate as titration with normal alkali, but for comparative purposes is sufficiently reliable. The sterilized milk was titrated but once in order to avoid every possible chance of contamination. Plates were prepared in 1 per cent. glucose agar from all flasks and a number of colonies transferred from each plate to slant agar, litmus milk and glucose agar. A series of butterfat determinations were made by the Babcock method in order to determine whether any fat was lost during the fermentation. Notes in general were made as to the appearance, consistency, taste and odor of each of the flasks. All fermentations were allowed to proceed at an average temperature of approximately 21 C. (70 F.).

In order to eliminate the personal equation a series of samples were tasted by three physicians independently. The samples prepared for this test were sent in 200 c.c. bottles and each bottle numbered, so that the experimenter did not know what he was tasting. Numerous similar tests were made by asking persons working in the laboratory to give their opinions, all of these tests being made with the same precaution, viz., keeping them in ignorance of what they were tasting.

In addition to the above described experiments I prepared three capsules, one from sour milk, another from a pure culture of *Strept. lacticus,* and a third from a mixture of *Strept. lacticus* with a yeast isolated from one of the market preparations. These capsules were subjected to the same tests as the others. The results of these experiments will be given by taking up a discussion of the findings of each separate preparation first and then by discussing the results as a whole.

The following account of the investigation of commercial preparations is a summary of detailed results of the experiments. Since there was no marked difference between the samples bought in the open market and those obtained from the manufacturers, only one of each will be described. The numbers refer to the various persons who have given their opinions as to taste, etc. When there is no mention of butterfat no change in percentage was noted.

LACTOBACILLINE

This preparation (made by the Franco-American Ferment Co., New York) is put up in small brownish tablets, forty-eight in a box, and also in powder form. It has a decidedly acid taste. Micro-organisms found in the tablets: *B. bulgaricus, Strept. lacticus,* an acid-forming staphylococcus, *B. subtilis,* and a yeast. Boiled milk inoculated showed *Strept. lacticus* in overwhelming numbers and large numbers of the yeast cells. *B. bulgaricus* was in relatively small numbers. The degree of acid formed in three days was 0.82 to 0.85 per cent. (lactic acid). The final product had a generally good taste and consistency.

Samples tasted from a preparation made with raw certified milk were commented on as follows:

1. Taste good and creamy.
2. Rather unpleasant, slightly bitter.
3. Disagreeable; not due to acid.
4. Too acid, disagreeable.

The same prepared with boiled certified milk:

1. Generally good, boiled taste.
2. Sweet and somewnat nutty flavor, also like boiled milk.
3. Slight acidity, slight sweetish flavor.
4. Milk scorched, sweetish flavor, not at all like buttermilk.

With inoculated sterilized milk: Taste was not pleasant. The predominating micro-organisms were *Strept. lacticus* and a yeast.

FERMENLACTYL

This preparation (made by the Anglo-American Pharmaceutical Co., Ltd., London, Paris and New York) comes in small yellowish tablets which taste like malted milk, six tablets in a bottle and eight bottles in a box. The organisms found in original preparation: *B. bulgaricus, Strept. lacticus,* a yeast and alkali forming bacteria probably *B. subtilis.* Boiled milk inoculated showed *Strept, lacticus* and yeast cells in large numbers. In sterilized milk a staphylococcus, *B. bulgaricus* (not in large numbers), *Strept. lacticus* and yeasts were found. The degree of acid after three days varied from 0.80 to 0.89 per cent.

In certified milk, both raw and boiled, the taste and appearance were good on the whole.

In ordinary raw milk: "Sweet, creamy and pleasant acid" was the verdict of three individuals.

In boiled milk the opinions as to its flavor were unanimous, that it was pleasant but the boiled milk taste was present.

In sterilized milk the acidity after three days was only 0.48 per cent. Micro-organisms present were: *B. bulgaricus, Strept. lacticus,* a staphylococcus, and yeast cells, *Strept. lacticus* was the most prevalent.

1. This work was done in the Bacteriologic Laboratory of the University of Chicago. I acknowledge my indebtedness to Prof. E. O. Jordan for permission to use laboratory facilities freely.

KEFILAC

This preparation (made by the Kefilac Co., Atlanta, Ga.) comes in large white oval tablets, sixteen in a tin box. Almost tasteless. Micro-organisms in the tablets: *Strept. lacticus, B. aërogenes*, a chromogenic torula, alkali forming bacilli (*B. subtilis*), a yellow pigment forming bacterium and a few organisms resembling *B. bulgaricus*. Acid formed after three days, 0.79 to 0.88 per cent. The final product had a generally pleasant taste and consistency. Some gas was formed in the curd.

Opinions as to taste, etc., in ordinary raw milk: Sweet, creamy and pleasantly acid; the verdict of three individuals.

In boiled milk the opinions as to its flavor were the same as in raw milk except that the cooked taste was noticeable.

In sterilized milk *Strept. lacticus* and yeasts were prevalent.

YOGURT

This (made by the Yogurt Co., Battle Creek, Mich.) is put up in both capsule and tablet form. The tablets are soft and crumble readily, are light brown and of a floury taste. The capsules are tasteless. The original preparation contains large numbers of bacteria, among which *Strept. lacticus* was found in large numbers, also *B. subtilis, B. aërogenes, Oidium lactis* and a yeast. The amount of acid formed after three days was 0.64 to 0.90 per cent. The final product varied considerably, in some cases being quite pleasant and creamy, in others rather disagreeable. Gas was found frequently in the curd.

Opinions as to taste, etc., in certified milk, both raw and boiled, the taste was disagreeable, much gas formed and a great deal of whey separated after three days. Sometimes a bitter taste was noticeable.

In ordinary raw milk:

1. Sweet, creamy and slightly acid flavor.
2. Slight acid flavor, not as palatable as some others.
3. Pleasant acid flavor, tastes like buttermilk.

In ordinary boiled milk:

1. Least acidity of all samples tasted, quite strong, of a peculiar nutty (boiled) flavor.
2. Least acid, somewhat sweetish and disagreeable taste.
3. Boiled milk flavor, not acid, sweetish, disagreeable.

In sterilized milk: Here the taste was quite pleasant and *Strept. lacticus* and yeasts were predominant.

LACTONE

This preparation (made by Parke, Davis & Co., Detroit, Mich.) comes in small white tablets in a bottle. Organisms found in the original preparation: *Strept. lacticus*, a gas-forming bacillus (*B. aërogenes*) was found occasionally, not in all tablets examined, and a non-gas-forming bacillus. According to directions one-third of a quart of water was added in all experiments excepting those in which sterilized milk was used. The butter was consequently reduced to about 75 per cent. of the original content (in one case from 3.4 in the milk to 2.5 in the buttermilk). The amount of acid formed was from 0.69 to 0.92 per cent. Whey separated readily, always on the third day and mostly on the second day. In certified milk, both raw and boiled, the taste was plainly sour, with little flavor.

Opinions as to taste, etc., in raw ordinary milk:

1. Weakly acid, less flavor than any.
2. Weakly acid, no other flavor.
3. Slightly acid, no particular flavor, not at all like buttermilk.

In ordinary boiled milk:

1. Creamy, slightly acid, the peculiar nutty (boiled) flavor.
2. Acid flavor, with slight sweet flavor.
3. Peculiar acid flavor, not like buttermilk at all.

In sterilized milk: Only 0.31 per cent. acid was formed after three days, few bacteria, bitter taste. *B. subtilis, Strept. lacticus* (not numerous) and staphylococci.

PREPARATION "X"

This consisted of the dried curd of milk, which had soured by the natural process for four days at room temperature. After being put up in capsules the appearance was yellowish like Yogurt capsules and the taste was somewhat cheesy. The acid formed in milk after three days was from 0.80 to 0.91 per cent. In certified milk, both boiled and raw, the taste and consistency were good and whey separated only in one sample on the third day.

Opinions as to taste, etc., in boiled certified milk:

1. Slightly acid flavor, nutty (boiled) flavor.
2. Purely acid, not unpleasant.
3. Sweetish flavor, too thick.

In sterilized milk: Taste good, like buttermilk. Acidity, 0.85 per cent. Micro-organisms, *Strept. lacticus* and yeasts.

PREPARATION "XX"

This was made by inoculating sterilized milk with a pure culture of *Strept. lacticus* isolated from market milk and a yeast from Lactobacilline. This preparation produced a fine buttermilk taste with an exceptionally delicate flavor and was favorably commented on by five persons. The curd was smooth, no whey separated for three days and the acidity was extremely pleasant. This preparation was substituted for fermenlactyl by a gentleman who had used the latter for several weeks. According to his judgment "XX" was preferable.

NATURALLY SOURED MILK

A sample of this was also tested by three persons, with the following results:

1. Pleasant and creamy with palatable acidity.
2. A little too much acid to be pleasant.
3. Pleasant acid flavor. Tastes like buttermilk.

This preparation was ranked among the four best samples out of twelve by one experimenter. *Strept. lacticus* was present in almost pure culture.

STERILIZED MILK

This was inoculated with a pure culture of *Strept. lacticus*. A good smooth curd was formed and five out of six persons tasting this thought it was genuine buttermilk.

It was interesting to note the varying rapidity of acid formation in these experiments. If certified milk or boiled milk was inoculated the acidity developed more slowly than if raw ordinary milk was used. In raw ordinary milk the high point was reached on the second day or nearly so and then remained stationary. In certified and boiled milk the high point was reached on the third day, while on the second the acid was either little more than on the first day or but slightly higher.

It is evident also that there is a parallelism between the process of fermentation of milk inoculated with the preparations discussed and the natural process. The products in both cases are quite similar. The great prevalence of *Strept. lacticus* is a leading feature. The amount of acid produced by this organism in pure culture is about the same as the amount produced by the use of these preparations.

The preparation of milk by the use of Fermenlactyl and Lactobacilline is rather a difficult matter in the household. In hospitals and laboratories there is little difficulty, but since the use is chiefly intended for the house it seems rather difficult to observe directions closely. The temperature for the successful growth of *B. bulgaricus* is higher than ordinary room temperature so that the benefits claimed for the use of this organism are hard to obtain. In Bulgaria, where the original Yahourth or Yogurt is largely prepared, great care is taken to keep the inoculated milk warm. Previous to inoculation with the Bulgarian ferment (Maya) the milk is boiled down to half its volume and inoculated at a temperature of about 45 C. (113 F.).

SUMMARY

The usefulness of lactic acid or lactic ferments as curative agents for intestinal putrefaction is still problematical. Much evidence in its favor has accumulated of late years and it is to be desired that exact scientific

investigations of a decisive character will be undertaken.

The evidence in favor of the use of *B. bulgaricus* as a lactic acid producing organism for the purpose of arresting intestinal putrefaction is not convincing. The association of *Strept. lacticus* with the Bulgarian bacillus leaves doubt which one of the two organisms is the one responsible for the beneficial effects claimed. The Bulgarian bacillus produces a disagreeable taste in milk by decomposing some of the fat and the addition of *Strept. lacticus* is universally practiced to overcome this difficulty.

The experiments which have been reported in regard to finding the Bulgarian bacillus in the feces are incomplete in so far as no statements are made in regard to the number of these bacilli found in relation to other intestinal bacteria, especially in relation to intestinal streptococci.[2]

Assuming that the presence of free lactic acid in the digestive tract is beneficial, it has not been definitely shown that lactic acid is actually produced in considerable quantity by the presence of lactic acid bacteria in the intestines. The evidence is decidedly in favor of the introduction of sour milk, or pure cultures of lactic acid bacteria in connection with a diet in which milk is a prominent feature. Lactic acid forming bacteria are constantly present in the digestive tract, and we have no convincing evidence that the additional introduction of lactic acid bacteria is of benefit.

There is so far no convincing evidence that sour milk prepared with commercial cultures is preferable to naturally sour milk, as far as the therapeutic effect is concerned. It seems advisable, however, to boil or pasteurize milk if good reliable "certified" milk is not obtainable, and if this is done an artificial starter is necessary. For this purpose either one of the above discussed preparations may be used, or one of the commercial butter starters. In those countries where sour milk is generally used the starter consists in a small amount of the previously prepared milk. This can be done with any other starter. A small amount of the prepared sour milk may be used for inoculation of the next lot after this has been boiled or pasteurized.

In spite of Metchnikoff's statement that the presence of yeasts is detrimental, the commercial preparation investigated, excepting only lactone, contain yeasts in large numbers. Undoubtedly some alcohol is produced by these and probably some esters which impart aroma to the sour milk. Yahourth of the Bulgarians, kefir, koumiss, leben and all the other fermented milk beverages contain alcohol-forming yeasts, although the amount produced is very small.

Although the sense of taste is largely a matter of personal judgment and idiosyncrasy, it is a matter of no inconsiderable importance. A product of pleasant taste is surely of higher value than one which is disagreeable, and this point should not be neglected. The results of the samples tasted are fairly consistent and a careful perusal will show that there is a decided preference in some cases. The taste produced by the activity of *Strept. lacticus*, perhaps with additions of an aroma-producing yeast, is without doubt the most preferable and evidence in favor of the use of this organism must of necessity be of great value.

2. Recently Sewerin has examined a series of seven samples of Lactobacilline in Germany and was unable to find *B. bulgaricus* in any one

NIGHT CAMPS FOR THE TUBERCULOUS

THE UTILIZATION OF THE CONSUMPTIVE'S LABOR POWER

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In much of our tuberculosis work in municipal and state fields it seems to me that we are open to the criticism applicable to the man who, without telling the naked how to get food and raiment, constantly exhorted them to be fed and clothed. Without telling the tuberculous man how to find maintenance for himself and, more especially, those dependent on him, we exhort him to take the cure for longer or shorter periods.

Those we do provide with maintenance we frequently demoralize with idleness in our sanatoria. It merits objection, it seems to me, that many in charge of the disposition of funds in state and charitable institutions for the tuberculous frequently pauperize by failing to use the potential energy of the patients of such places by compelling them to make some return for benefits. Yet there is scarcely a sanatorium in the country that could not, with benefit to the patient, utilize 33 per cent. of the total potential energy of those resident in the institution. Some remuneration for the work could justly be made in board or money. This is more true to-day when, with little foresight from the standpoint of prevention, the patients admitted to these places must be those with incipient tuberculosis, who in the main grow fat, vigorous and lazy in a few weeks.

If the statement that *jedermann hat am Ende ein bisschen Tuberculose* be true, then, of course, for every one who knows that he is affected with tuberculosis there are one hundred who never know they have it, yet continue working throughout their lifetime and seem none the worse for it.

Since long before the excellent systematic work outlined by Patterson at Frimley, or even before the differences of Brehmer and Detweiler on the question of exercise, we are familiar with the records of patients who, under advice, or contrary to advice, rode horseback or took active exercise in the open air and yet made excellent recoveries.

I fear that, being overwhelmed by the number of yearly deaths, we are apt to forget, especially in our dispensary work, the important lessons to be learned from such facts as the above.

My attention has been called to this lately in making provision for those whom, by our present ability to make early diagnoses, we find by examining the households of those consumptive patients reporting at the dispensary. These cases are unsuspected by the individuals themselves and are of varying degree of intensity from incipiency to far advancement. The patients have in the past been *en masse* urged to take the cure in a way which is obviously impossible when we stop to think. We have frequently had in the hospital in Pittsburg from three to five members of one family.

I do not wish my remarks to be taken as in any way bearing on febrile cases, although I have frequently known cases of moderate fever up to 100 of evening temperature in which the patients improved only after being given one hour or two of light work daily. The best law to follow, of course, is that patients with tuberculosis should be treated by the physician, as nearly as possible, individually, both psychically and physically, as if there were in each case a separate malady.

My reference is more especially to the following groups of cases which every properly run dispensary must yield in comparatively large numbers:

1. Patients not conscious of their lesions, (a) with open lesions, (b) with closed active lesions, and (c) those with closed inactive lesions, who, from their existing social condition, must continue working. In this group are included the majority of those who are found by examining the households of the tuberculous who report at the dispensary. Many of these refuse to stop work; many can not; many need not. I could enumerate instances in great number, but I need not, as all who have to do with the tuberculous are only too familiar with such cases.

2. Patients who are conscious of their lesions but who will not, or from their economic circumstances feel that they can not stop their work. These are too often young women, each the sole support of a widowed mother, or mothers whose absence in the daytime would break up the household. There are also many who can not be persuaded of the seriousness of their sickness: feeling able to work, they are often induced to continue earning in order to save property on which they have already paid a good deal.

3. Patients who are conscious of their lesion, and who are not working but are able to work. Among these are (a) those who have been frightened by what may be called the defects of our modern crusade, (b) those whose disease has been arrested but who have been demoralized by our present sanatorium methods, and (c) many who have grown accustomed to the support of others at home and now refuse to work. These are able to maintain their position through the fear which they are able to infuse into those at home.

From the foregoing groups are many who, if they feel that they are under supervision, are willing to work. Many can be induced to accept for a time the advantages of sleeping out at night with two meals daily to help them in recovery. Many under the jurisdiction and moral suasion of a hospital do better than under the influence of poor home surroundings. There are also many who are boarding and whom the boarding-house refuses longer to keep, etc.

For all of these we have found a night camp to be a very feasible and valuable adjunct to the work of the Tuberculosis League, and recommend it to other municipal organizations interested in this work.

For this work in the past we have utilized simply the beds in the hospital shacks and not a separate department, as the name might indicate. The patients report at the end of the day's work; their temperature and pulse are taken and recorded when they retire to their reclining chairs or bed to rest until supper. After supper they are at rest until bedtime, 9 p. m., when they sleep out of doors. The time of their return to the hospital varies in compliance with the requirements of their work. The work is arranged with the employer to suit the case as nearly as possible. In the morning they rise, dress, have their temperature and pulse recorded, have their breakfast and go to work. They arrange for lunch out of the hospital. Chest examinations are made and recorded as with all cases in the hospital. The advantages to the patient are evident: constant medical supervision and advice, two nourishing meals daily, compulsory rest and open-air sleeping facilities.

The cost of maintenance is difficult to arrive at under the present management, as it is included with the general hospital per capita maintenance, but it can not be much less than ordinary hospital maintenance. I look on this, however, as of minor importance. The basis of our work has been to cure and prevent as much tuberculosis as possible with the least amount of pauperization of the patients. The patients of the night camp are supposed to pay what they can, which amount we help them to arrive at after gaining a knowledge of their liabilities and earnings. In many cases it is nothing; in no case is it very much.

Of more importance is the economic value of the camp. It saves the labor of the individual to the state, often prevents the necessity of the state or municipality providing for others dependent on the patient, and, best of all the patient himself frequently makes rapid progress and arrest of his disease.

Its sociologic value is of equal importance. We are more and more beginning to grasp the truth that the tuberculosis problem is not concerned with that malady alone, but is a crusade which includes a reconstruction of the whole social fabric of a municipality. In the present instance the night camp preserves the self-respect of the individual. He often attracts the admiration of his associates and furnishes an example of heroism which is growing rarer in this past few years among our tuberculous. It takes real heroism to admit to your associates that you are tuberculous. The night camp, besides, is a very potent instrument in appealing to those most valuable citizens, the charitably inclined. These are so often fooled that they become skeptical of good done with their contributions: but where they see an effort being made to use funds in such a way as this, it has some power in restoring their confidence.

Perhaps of maximum importance is the educational value of the night camp: first, on the patient, who learns the methods of prevention of spread of tuberculosis and disposal of sputum: second, on all with whom he comes in contact when he can be persuaded to follow the teaching with which he is made familiar; and third, in overcoming the sad state of affairs, a product of our method of crusade, the fear of employers and employés of even the careful consumptive. I have faith that through the night camp much will be done to help the hardships which now are so commonly thrust on the consumptive, preventing often his doing the very things asked of him. You and I, his teachers, are too often guilty, unconsciously perhaps, of sharing this popular fear which does so much to defeat our ends.

Clean Milk.—John Ferguson, in the *Canada Lancet*, states that the slaughter of the innocents through the milk can has far exceeded the slaughter wrought by pestilence and war. We must aim for the following conditions: 1. Healthy cows and the feeding, stabling and milking of these carried on according to the best methods. The care of the milk should be such as maintains the purity of the milk until it reaches the consumer. This is certified milk. 2. Healthy cows and as many safeguards as can be thrown around the milk supply, but yet not such as to keep it up to the standard of certified milk. In such cases there is the need for pasteurizing the milk. 3. Unhealthy cattle and careless, dirty methods of handling the milk should be mercilessly condemned and put a stop to wherever found. Milk that has been pasteurized is not so good for the feeding of infants and children, as milk that is secured under the certified plan. It is much better, however, than bacteria-laden milk; and for the time, we must accept the lesser of two evils.

THE ECONOMICS OF THE GRADUATION OF MEDICAL CANDIDATES

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OMAHA

The present article, suggested by the excellent statistics of medical education published annually by THE JOURNAL, is a cold-blooded statistical study of certain problems of supply and demand, bearing quite directly on the ultimate bread-and-butter problem of the profession. Let us start with some statistics from the U. S. Census:

Year.	Physicians.	Population of U. S.	Average clientele.
1870	62,383	38,558,371	618
1880	85,671	50,155,783	585
1890	104,865	62,622,250	597
1900	132,002	76,303,387	568
1910	160,000	91,500,000	572*

*Estimate, see below.

Roughly speaking, the ratio of physicians to population is about the same as of white to red corpuscles in the blood, but with a moderate leucocytosis.

In the thirty years from 1870 to 1900, the population nearly doubled. In the same period the number of physicians more than doubled; in fact, it increased to about 212 per cent. of its former number. To put it in another way, the average physician had a clientele which was less than in 1870 by 50 persons, or about 10 families. Not only was the clientele smaller, but it included a larger proportion of persons unable or unwilling to pay for services, and it was healthier, notably in regard to tuberculosis, typhoid and pregnancy and the sequelæ of the last disease. So far as can be judged, fees have not increased except for surgical and other special procedures; but these are expected to and usually do prevent the chronic pelvic and other forms of invalidism which formerly made many persons veritable gold mines for the profession. The purchasing power of the dollar in 1900 was probably just about that of the debased current dollar of 1870.

It is plain that, to maintain the same ratio between the medical profession and the total population, the former must increase at a rate which is the sum of its own death rate and the net rate of increase of the non-medical population. As the population is so many times the number of physicians, the non-medical population may be regarded as practically the same as the total population. For the year 1890 the mortality of physicians was 19 per thousand. For the year 1900 I have not been able to find a definite statement, but the general mortality for males over 25 years old was a trifle over 21 per thousand for the registration area. The percentage of physicians under 25 was 5.4 per cent. for 1890 and almost exactly 5 per cent. for 1900. Since then it has unquestionably decreased both on account of the increased amount of preliminary education required of medical matriculants and the addition of a year to the medical course which has fallen within the present decade for probably the majority of schools, and also because the members of the profession already graduated have been increasing in years, while the relative number of new graduates has fallen, except for a couple of years. Moreover, a death rate estimated by ordinary census statistics is less liable to be complete than when estimated by the returns of a "registration area."

The American Medical Association reports place the death rate for the profession at 14 to 15 per thousand. These are probably defective on account of the liability to lose track of physicians in retirement after they have ceased to practice and to take an interest in medical organizations.

The rate of increase of the general population has gradually fallen as follows:

Years.	Per Cent.
1870-1880	30 +
1880-1890	24 +
1890-1900	22 —
1900-1910	20 — (estimated)

As we are dealing with what are virtually problems in compound interest, an increase of 30 per cent. for 10 years obviously means something less than 30 per thousand for one year. Thus, to keep the average clientele of the physician at the same point, an annual graduation of something less than 5 per cent. would have been permissible in 1870; of about 4.4 per cent. in 1880; of about 4.2 per cent. in 1890; of about 4 per cent. in 1900. As a matter of fact, the graduates of 1880 numbered 3,241, 3.8 per cent. of the total number of physicians, and the average clientele increased by 12 in the next decade. In 1890 they numbered 4,454, 4.2 per cent., and the average clientele fell by 19 in the next decade. But very little dependence can be placed on the results of a single year, nor can the census of physicians for a decennial year be taken as a basis for computations for successive years, and, as a matter of fact, the graduation classes have varied considerably and tended to increase disproportionately until 1904, when the high-water mark of 5,747 was reached.

For comparison with the table of increase of the general population it may be stated that the medical profession increased 37 per cent. from 1870 to 1880, with a decrease in average clientele of over 5 per cent.; 22 per cent. from 1880 to 1890, with an increase in average clientele of over 2 per cent.; 25 per cent. from 1890 to 1900, with a decrease in average clientele of over 3 per cent. So long as the differences in percentage rates are small the clientele will increase or decrease by just about the difference between the percentage increase of the medical profession and the total population — of course, inversely.

The estimate of the numbers of the medical profession in 1910 given at the beginning (160,000) was reached by striking an approximate average between the rates of 22 and 20 per cent. increase. On page 607 of THE JOURNAL (Aug. 15, 1908), however, there is given a list of the graduates since 1900, whose numbers gradually rose to 5,747 in 1904 and have since fallen to 4,741 for 1908. Even an unprecedented increase in medical matriculants can not cause an increase in graduates before 1912, and the estimate of 4,700 graduates has been adopted for each of the next two years. By calculating the mortality of the profession at 21 to 1,000 for 1900, subtracting this from the total and adding the graduates for 1901, and so on for each successive year, the conclusion has been reached that in 1910, the profession will number 154,030. It will be interesting to learn how nearly this estimate coincides with the next census report. If this estimate and that of the total population, 91,500,000, prove to be approximately correct, the average clientele will have increased to 594.

From the experience of various European countries, we know that, without any particular effort to systematize practice, or falling off of the incidence of disease, one physician can easily care for a population of 1,000, and it may be said that if this ratio could be reached,

most of the economic problems confronting the medical profession, and many ethical ones which always arise under the temptations of poverty, would be solved, provided, of course, that there were no corresponding decrease in the demand for medical services.

How slowly any such ratio as 1 to 1,000 can be reached under any conceivable practical conditions may be illustrated as follows: If the rate of increase of total population falls only 2 per cent. more, following the analogy of the decades since 1880, we shall have something like 108,000,000 inhabitants in 1920. The annual mortality of the medical profession in 1910 will be about 3,234. More than this number of physicians was graduated in 1880 and it is scarcely possible that, even by continuing to raise the medical standards, coalescing colleges and discouraging matriculants, the average graduation list can be still further diminished so as merely to keep the profession at its present numeric strength. But suppose that this result could be reached; the average clientele would be increased by only about 10 annually or by direct division of the expected population number in 1920 by the present estimated number of physicians the clientele at that time would be almost exactly 700.

Allowing for a decennial increase of population dropping by 2 per cent. for each decade, the medical clientele would reach 811 in 1930 and 925 in 1940. In other words, we are about thirty-five years in advance of the requirements. This means not only individual average hardship for the medical profession, but a serious economic problem for the whole country.

Clinical Notes

A MICRO-ORGANISM WHICH APPARENTLY HAS A SPECIFIC RELATIONSHIP TO ROCKY MOUNTAIN SPOTTED FEVER

A PRELIMINARY REPORT *

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Since the spring and summer of 1906, bodies which I have referred to in my notes as "diplococcoid bodies," and sometimes short bacillary forms, have been found with considerable constancy in the blood of guinea-pigs and monkeys which were infected with Rocky Mountain spotted fever. They have also been seen in the blood of man but not so frequently. Much more time has been spent on the blood of the experimental animals than on that of man in view of the fact that it could always be obtained in fresh condition.

The form most commonly found is that of two somewhat lanceolate chromatin-staining bodies, separated by a slight amount of eosin-staining substance. The preparations of Giemsa, as furnished by Grübler, has been used almost exclusively, and with variations in the technic the intermediate substance may stain faintly blue.

In spite of the constancy with which these bodies were found, it did not seem justifiable to claim that they represent the microparasite of the disease, for two reasons: (1) the very complex morphology of the blood, especially in febrile states, when various cells and probably their nuclei are subject to unusual disintegration; (2) because of my inability to cultivate a micro-organism of this character from infected blood by the use of ordinary and some unusual culture media, under various conditions of cultivation, or by other means to obtain it in satisfactory concentration.[1]

THE BACILLUS IN THE TICK

Although infected ticks had been examined previously in a more or less cursory manner, their systematic study was not undertaken until recently. In the pursuit of this work advantage was taken of the fact that the disease is transmitted by the infected female to her young through the eggs, as described in a previous report. A repetition of these experiments in the winter of 1907-8, with the help of Dr. Maria B. Mayer, resulted in such transmission in 50 per cent. of the ticks used, the fact being determined by allowing the larvæ to feed on normal guinea-pigs. This second series has not been published heretofore.

Female tick No. 40, a *Dermacentor*, from Montana, had produced fatal infections of spotted fever in guinea-pigs 1740 and 1764. A number of eggs from the first day's laying were crushed individually on cover glasses, fixed in absolute alcohol, and stained with Giemsa's stain. Each egg was found to be laden with astonishing numbers of an organism which appears typically as a bipolar staining bacillus of minute size, approximating that of the influenza bacillus, although definite measurements have not yet been made. Various forms are seen depending on the stage of development and the arrangement in which two or more may be found. It is very common to find two organisms end to end, with their poles stained deeply and the intermediate substance a faint blue, resembling a chain of four cocci. When the chromatin is not yet sharply limited to the poles, the somewhat lanceolate forms so often recognized in the blood are seen. Not infrequently delicate bacilli with a uniform distribution of the chromatin are found. These are all interpreted as stages in the evolution of a bipolar organism. They are present in varying numbers in different eggs, but as a rule they are surprisingly numerous, and in some instances they would certainly count into the thousands. Many faintly staining, apparently degenerate forms are encountered.

Examination of the eggs of three dermacentors from Idaho (different specifically from the Montana dermacentor), which were infected from the guinea-pig, showed the presence of the same forms (Ticks 5, 7 and 9).

Conference with zoologic scientists who have made a particular study of the structure of eggs brought out the fact that such bodies are not known as a constituent of the egg of any species of animal.

Although it has not yet been possible to examine the eggs of ticks which are known to be free from spotted fever, the equivalent control has been made through a comparison of the visceral organs of infected and uninfected ticks. The salivary glands, alimentary sac and ovaries of infected females are literally swarming with exactly similar micro-organisms. On the contrary, they appear to be entirely absent from the viscera of the uninfected tick, both male and female.

AGGLUTINATION REACTIONS

The most striking evidence of the probable etiologic relationship of this organism to spotted fever is found

* From the Pathological Laboratory of the University of Chicago

1. Mr. P. G. Heinemann assisted in an extensive series of culture experiments in the spring of 1907.

in the positive outcome of agglutination tests. Fortunately it is so numerous in the eggs that a bacterial emulsion of reasonable concentration for agglutination tests can be made by crushing forty to fifty eggs in about 0.05 c.c. of salt solution. The material is so scant that only the microscopic method could be used. The preparations were made as hanging drops, incubated for two hours, dried, fixed with absolute alcohol and stained.

The serum of the normal guinea-pig either causes no agglutination at all, or at the most produces only slight agglutination in proportions of 1 to 1 and 1 to 9. Dilutions higher than this cause no agglutination. In testing the agglutinating powers of immune serums, three animals which had been infected from different sources and had recovered were used. One (1751) had been infected with a dermacentor from Idaho; another (1692), with a strain handed down direct from guinea-pig to guinea-pig for nearly three years without the intervention of ticks, the original infection having been obtained from the blood of man; the third (1757) with a strain kept in the same way since last spring. Graded dilutions, beginning with 1 to 1 and going as high as 1 to 200, were used in the different series, with the striking result that a complete agglutinating power was present in the three immune serums in dilutions up to 1 to 160. It was somewhat less in a dilution of 1 to 200. The highest dilution which will cause clumping has not been ascertained.

No fresh immune serum from man is at hand, but tests were made with three specimens which are about five, seven and nine months old respectively. They have been preserved in the ice chest with the addition of 0.3 per cent. of chloroform. The peculiar phenomenon of failure to agglutinate in concentrated solution was noted with all three. With the oldest serum no agglutination occurred until the dilutions of 1 to 160 and 1 to 200 were reached, when incomplete clumping was produced. With the second there was no agglutination in the dilution of 1 to 1, distinct clumping in 1 to 10, 1 to 20 and 1 to 40, with little or none in higher dilutions. In the serum of five months standing the reaction was absent in the dilutions of 1 to 1, 1 to 10 and 1 to 20, positive but not complete in 1 to 40, 1 to 80 and 1 to 120, with very little clumping in 1 to 160 and 1 to 200. Normal human serum caused clumping in a dilution of 1 to 1, a very slight amount in 1 to 10, and none at all in the higher dilutions.

The failure of the immune serums from man to agglutinate in concentrated solutions, whereas they did so in higher dilutions, is taken as an example of the action of the so-called proagglutinoids. As explained by Ehrlich's theory, this consists in the occupation of the bacterial receptors by inactive agglutinin which exceeds the active agglutinin in its affinity for the bacteria. With higher dilutions of the serum the agglutinoids are so diluted that they do not completely occupy the bacterial receptors, thus affording a point of attack for the active agglutinin, unless the latter has been eliminated by extreme dilution. This is well known as a property of old agglutinating serums.

BACILLI IN INFECTED SERUM

As a means of concentrating the organisms in the serum of the infected guinea-pig the following experiment was performed: Three cubic centimeters of fresh infected serum were diluted with an equal amount of salt solution, and to this was added 0.3 c.c. of an agglutinating serum from the guinea-pig. The mixture was placed in the incubator for two hours and then centrifugated for about ten hours at a speed of 1800 revolutions. All but the merest drop was then pipetted off and stained preparations were made of the sediment. Examination showed the presence of a moderate number of forms which are identical in appearance and size with those often recognized in ordinary smears of infected blood, and also with the "diplococcoid" forms seen in the egg of the infected tick. No such bodies were found in a control tube of normal serum.

The evidence pointing to this organism as the causative agent in spotted fever, though not complete, is of a striking character. In so far as I know it would be an unheard-of circumstance to obtain such strong agglutination with an immune serum, in the presence of negative controls, unless there were a specific relationship between the organism and the disease. In favor of the specific relationship in this case are also the presence of the organism in large numbers in infected ticks and in their eggs, its absence from uninfected ticks, and the presence of similar forms in the blood and serum of the infected guinea-pig.

Morphologically the organism is a bacillus and somewhat pleomorphic as described. Its resemblance to the bacilli of the hemorrhagic septicemias is striking, and in this connection it is important to note that spotted fever is a hemorrhagic septicemia. It has not been cultivated, although work with this end in view is in progress.

I have devised no formal name for the organism discussed, but it may be referred to tentatively as the bacillus of Rocky Mountain spotted fever. A further study of its characteristics may suggest a suitable name.

That a bacillus may be the causative agent of a disease in which an insect carrier plays an obligate rôle under natural conditions may be looked at with suspicion in some quarters. Yet, even without the evidence in this case, it would seem to be unscientific to be tied to the more or less prevailing belief that all such diseases must, on the basis of several analogies, be caused by parasites which are protozoon in character.

Further study of the relationship of the bacillus to the disease is being carried on and will be reported at a future date, together with illustrations and a more detailed account of its characteristics.

A CASE OF FORMALIN POISONING

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History.—Mrs. E. E., aged 33, was admitted to private ward of the Jewish Hospital, Oct. 16, 1907, suffering from ulcerative colitis, and was treated for eighteen days by high rectal irrigations of silver nitrate 1 to 1,000 solution. By mistake, on October 27, at 8 a. m., two ounces of formalin solution to a pint of water (about 12.5 per cent. strength) was used for a rectal irrigation. After receiving this solution the patient cried out that it felt as though a red hot iron had been put in the rectum and that she was dying.

Symptoms.—The pain in the rectum and abdomen was excruciating. There was marked pallor and coolness of the skin and mucus membranes, the face was expressionless. The eyes were dull and staring; the pupils were widely dilated and reacted very little. The heart action was delayed, irregular and feeble, the pulse being hardly perceptible. The respirations were irregular and sighing; deep breaths alternating with shallow inspiratory efforts. The mind was dull; cerebration was slow and questions were answered tardily and unwillingly.

The temperature was slightly subnormal. The clinical picture was one of collapse.

Treatment.—The patient was given one-half ounce of whiskey and 1/40 grain of strychnin hypodermically. Hot water bottles and blankets were applied to the body. A thorough high rectal irrigation of about a gallon and a half of saline solution was employed at once. As a result, the burning pain in the rectum and abdomen was ameliorated, the pulse became stronger, the temperature returned to normal in about one hour and the mind cleared.

Later Symptoms.—Three and one-half hours later violent retching and vomiting set in. The vomited matter was dark green, of offensive odor, alkaline in reaction, and free from acids and showed the presence of blood both microscopically and by the benzidin test. Diarrhea associated with violent tenesmus kept the patient on the bedpan almost continually for the next twenty-four hours. The stools were dark red in color of a syrupy consistence, had the odor of formaldehyd and contained pus blood, shreds of intestinal mucus membrane, fibrin and mucus in large quantities. The lips and tongue were dry and parched, thirst was excessive, the skin was dry, harsh and wrinkled, and later covered with a cold perspiration. The eyes were dull and the patient suffered from severe headache and vertigo. Marked asthenia was present. After the initial fall, the temperature, pulse and respiration gradually rose till evening, when, eighteen hours after the injection, the temperature rose rapidly to 104.2 F., pulse to 176, and respirations 36. A hypodermoclysis was given and it effectually restored the lowered body fluids, and tided the patient over the period of reaction. As the patient had not voided urine she was catheterized and two ounces of urine loaded with albumin, casts, and blood were obtained. For the next twenty-four hours there was almost complete anuria, the bladder being empty. The small amount of urine obtained contained albumin, blood, and casts.

Blood.—The blood examination which was normal prior to this accident, showed four hours later a leucocytosis of 30,800; polymorphonuclears, 94 per cent.; lymphocytes, 4 per cent.; large mononuclears, 2 per cent.; eosinophiles, 1 per cent. The red cell count was reduced to a little over 3,000,000; the hemoglobin to 65 per cent.; the coagulation time was two and one-half minutes.

Subsequent History.—October 28: The temperature came down to 100 F.; the pulse ranged from 120 to 130, and the respirations were 24. The vomiting and diarrhea, although considerably less, continued; the vomitus and movements still contained blood. The patient was extremely weak and was covered with a cold perspiration; the urine was still scanty.

October 29: The general condition of the patient was much better; the temperature was normal, the pulse was still 120, and the respirations were 24. The occasional vomiting was free from blood and the diarrhea had ceased. She retained some nourishment and voided considerable urine. The right arm and hand became numb and painful, with considerable loss of muscular power.

October 30: The patient felt very comfortable, the vomiting and diarrhea ceased, and she was able to retain considerable nourishment. The temperature and respirations were normal and the pulse, though accelerated, was regular and strong.

From now on the patient gradually and steadily improved, all the symptoms subsided, the rapid pulse being the last thing to disappear. Her alimentary and urinary tracts cleared up completely; she gained in weight, and was discharged on Nov. 9, 1907 perfectly well.

So far as we can find only four cases of formalin poisoning are reported in literature, and of these four only one case occurred in this country. This case was in Indiana and was reported by Charles Bock. An imbecile, aged 26, swallowed from one to three ounces of a 4 per cent. solution of formaldehyd. The gastric irritation was severe and he died thirty-two hours later of cardiac depression. The autopsy showed the gastric mucosa to be highly inflamed and its wall was necrotic, dark, tough and cut like old leather.

Kluber reported a case in which a man drank an unknown quantity of formalin in mineral water; the chief symptoms were similar to those of acute alcoholic intoxication; recovery was complete.

Gerlach, in 1902, reported a case with similar symptoms with recovery which followed the swallowing of from 2 to 2½ ounces of 35 per cent. solution of formalin.

A case corresponding very closely to ours was reported by Zorn. The patient, a man, recovered after drinking half an ounce of a 40 per cent. solution of formaldehyd. The chief symptoms came from irritation of the alimentary tract and kidneys; they were retching, vomiting, vertigo, dyspnea and a burning pain in mouth and stomach; there was diarrhea with violent tenesmus; the secretion of urine was suppressed for twenty-four hours. Recovery was complete in four days.

In conclusion we would state that the determination of the presence of formalin poisoning is made by the odor of formalin in the vomitus and stools and by the following simple tests: Urine plus ammoniated silver nitrate gives a black color. Solution to be tested plus an equal volume of 40 per cent. caustic potash which contains 5 per cent. resorcin gives a red color.

Finally we might also add that from the four cases reported in the literature and our own that the symptoms of formalin poisoning, when taken into the alimentary tract, are variable; that the predominating symptoms are severe irritation of the gastrointestinal tract and kidneys with cardiac depression. The cause of death is usually from the latter. As no antidote for this poison has yet been found, the most rational treatment is to wash out the stomach and intestines with salt solution, both immediately after the poison has been taken and at suitable intervals thereafter; for Zorn has determined that the poison is excreted there. To combat the cardiac depression active stimulation should be given. Hypodermoclysis or saline infusions are needed to raise the blood pressure and to replenish the fluids of the body, which are tremendously depleted by the hydragogue effect of vomiting and diarrhea. If recovery occurs it is usually complete and permanent.

105 Greene Avenue.

FRACTURE OF PELVIS IN HIGH FORCEPS DELIVERY

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The comparative rarity of contracted pelvis outside of large centers of population is frequently the cause of lack of routine methods of examination of obstetric patients by the general practitioner. In the south, extreme deformities are exceedingly rare, and slight abnormalities may easily exist undetected. Many physicians in this part of the country state that they have never seen a case in which they considered symphyseotomy or a Cesarean section necessary or indicated.

The following case is reported as illustrative of these conditions and also because of the rarity of fracture of the pelvis occurring in forceps delivery:

Patient.—Mrs. B., aged 20, was a well-nourished primipara, of average height and weight, and with a good family history.

History.—Labor pains commenced Sept. 27, 1908, at September 29, at 9 p. m., I saw her in consultation with Drs. W. DeLay and W. P. Harbin. Axis-traction forceps had been applied four hours previously without avail.

Examination.—The head appeared to be of normal dimensions; the occiput presented in L. O. I. A. position, and was unengaged at the brim. The surroundings were very unhygienic and no measurements were taken, though the anteroposterior diameter seemed shortened.

Delivery.—Simpson long forceps were applied and delivery was effected in an hour without undue force in the extraction. A feeling of crepitation was experienced while the head was descending, but it made no special impression at the time. The fetus was normal in appearance but was stillborn; its weight was eight pounds. There was a small perineal tear which was repaired. After a thorough examination there was discovered a separation at the symphysis about 1.5 cm. wide. The urethra was torn and displaced to the right with consequent partial incontinence of urine. There was a fracture of the right ascending ramus of the ischium about 3 cm. below the symphysis. The measurement between the anterior-superior spines of the ilium was 25 cm. in the relaxed condition.

Subsequent History.—The hips were bandaged. The patient had a septic temperature for a month and finally an abscess developed between the layers of the abdominal muscles on the left side, just above Poupart's ligament. It was opened and drained, but a sinus persisted. The factured bone united promptly, but about the end of the second month septic pneumonia developed and the woman died Dec. 29, 1908, three months after delivery.

The pubic separation remained, notwithstanding the efforts at bandaging. The fracture was evidently produced by the passage of the head through the outlet, showing that even after a symphyseotomy the possibility of a fracture should be borne in mind in cases of contracted pelvis.

A DEVICE FOR MEASURING FLEXION DEFORMITY IN HIP-JOINT DISEASE

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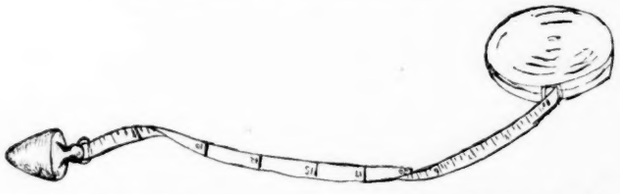
As the increase or decrease of deformity in this disease is a most helpful guide to the efficiency of treatment, an accurate and easy method of measurement is demanded. It is probably true that months of treatment might often be avoided by the early recognition of an increasing deformity. Failure to appreciate the value of studying the slight variations in the signs of



a joint disease has been responsible, probably, for the retention of such gross mechanical treatment as the gypsum cast, with an unwarranted faith that air and eggs will accomplish the rest.

We already have a sufficiently accurate method in the one worked out by Kingsley,[1] but as it necessitates the use of a reference table it is difficult of application.

The device herewith presented transfers this table from the printed page to one side of a tape measure. Instead of reading one side of a triangle in inches and then referring to the table for the degrees of the angle opposite, the degrees of the angle can be read directly from the tape.

Kingsley's table consists of the computations of the angles subtended by a series of perpendiculars in right-angled triangles, the hypothenuse of which is constant. With the patient on the examining table, the leg on the diseased side is held in its position of greatest extension, as indicated by the lumbar spine. A hypothenuse of twenty-four inches is measured from the table, opposite the joint, in the line of the limb, and from its end a perpendicular is dropped to the table and measured. By referring to Kingsley's tabulation the angle at the hip may be found.

Attaching a plumb-bob to a tape line, I measured inches from the tip of the bob and marked each with the angle which such a perpendicular would subtend in a right-angled triangle with a hypothenuse of twenty-four inches. In using this tape some one holds the leg in the deformed position. Twenty-four inches are measured along the leg and the plumb-tape dropped to the table. The angle of flexion is read directly from the tape.

1. Boston Med. and Surg. Jour., July 5, 1888.

THE USE OF ATROPIN SULPHATE IN ANESTHETIZING BIRDS FOR SURGICAL EXPERIMENTS*

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In 1907 an investigation was begun in this laboratory on the physiology of reproduction in the domestic fowl. It was the plan of this investigation to use in the main experimental surgical methods in the analysis of the problems involved. Such experiments were begun in the fall of 1907. Much of the detailed technic involved in these experiments had to be worked out *ad hoc*, both with reference to the character of the problems studied and to the nature of the material itself.

At the beginning of our operative work on birds a great deal of difficulty was experienced in the matter of anesthesia. Such a difficulty had not been foreseen and for a time greatly hindered the progress of the work. It is difficult for one who has been accustomed to the behavior of mammals under anesthesia to realize how differently birds behave under similar treatment. At the outstart of the work chloroform was used as an anesthetic. After a number of birds had been killed on the table by the action of the chloroform it seemed clear that some change in the technic must be made. Resort was next had to ether. Better results were obtained, but still a great deal of difficulty was experienced.

The difficulty which we have found to be inherent in anesthetizing the domestic fowl may be stated briefly in this way: If any anesthetic is pushed to the point at which the bird is in satisfactory condition for operative procedure, in about nine cases out of ten the bird will die on the table from the effects of the anesthesia before the operation, if extensive, can be completed. If, on the other hand, the anesthetic is given less freely the bird does not lose its reflex excitability. Every time a cut is made or a nerve is pinched with the forceps the bird will struggle. Our experience in anesthetizing birds, which has now covered a large number of individuals, leads us to believe that the only middle ground between these two extremes is afforded by those cases (unfortunately too few) in which the individual idio-

* From the Biological Laboratory of the Maine Agricultural Experiment Station.

syncrasy of the bird toward ether make it take the anesthetic well.

While we have made no detailed physiologic study as to the fundamental reasons underlying this difficulty respecting anesthesia which has been described, it seems reasonably apparent what these reasons are. Connected with the respiratory organs proper of a bird are the relatively enormous air sacs. During anesthesia the ether or chloroform vapor gets into these air sacs either by diffusion or directly as a result of respiratory movements. There is reason to believe that the vapor, once in the air sacs, stays there until it is absorbed by the tissues; in other words, it appears to be the case that the great bulk of an inhaled anesthetic in the case of birds must be eliminated from the body by way of the urinary organs rather than the respiratory organs. Assuming this to be the case there is no difficulty in seeing why forcing an anesthetic in a bird leads to disastrous results. The relatively enormous area for absorption afforded by the air sacs insures that a correspondingly large amount of the anesthetic will be taken up very quickly. This almost immediately affects the vagus center, with the consequent cardiac inhibition, respiratory failure and death.

In attempting to overcome this difficulty a considerable number of experiments were tried with indifferent success. Nearly every method of anesthesia which has been advocated was tried. From the glowing reports in the literature we were led to hope that scopolamin-morphin might prove to be the desired thing. A series of experiments with these drugs, in which various doses ranging from very small to very large were thoroughly tested, failed to yield satisfactory results. We found it impossible to induce satisfactory surgical anesthesia in fowls by injecting scopolamin-morphin. After various failures we finally began the routine use of atropin sulphate in connection with the anesthetic. Our idea was that if at the same time that the anesthetic was given to the bird some substance could also be given which should have the effect of neutralizing partially or completely the poisonous action of the anesthetic without destroying its anesthetizing effect it would then be possible to give the bird sufficiently large doses to attain the desired surgical condition without killing it. Now it is a well-known fact[1] that atropin is antagonistic in its pharmacologic action to substances like chloroform and ether. The suggestion was at once obvious that if atropin were not antagonistic to these other drugs in respect to anesthetic action, the poisoning might be obviated without disturbing the anesthesia by injecting into the organism, when the anesthesia was begun, a certain amount of atropin. The use of this drug in connection with chloroform or ether anesthesia has been advocated,[2] but, so far as we can learn, only to a very slight extent practiced.

This scheme of anesthesia was carried into effect in our work with birds in January, 1908. It may be said at once that the results from its use have been successful beyond anticipation. In our work we have kept birds on the operating table under the influence of the anesthetic for three or four consecutive hours, and at the same time carried on extensive surgical manipulations without the least ill effect from the prolonged inhalation of the anesthetic. Not only do the birds which have been given atropin in connection with the anesthetic survive prolonged and deep anesthesia, but they are in much better condition for the operation than those not so treated. Relaxation is complete and reflex activity disappears. A preliminary injection of scopolamin-morphin (morphin sulphate 1/3 gr., scopolamin-hydrobromide 1/75 gr.) we have tried in the place of atropin sulphate. The resulting anesthesia with ether is better than when the ether is used alone, but in our experience it is not so satisfactory as when the atropin is used.

The exact method of procedure which we now follow in anesthetizing birds is as follows: Immediately before beginning the administration of the anesthetic a 1/200 grain atropin sulphate tablet is dissolved in 1 c.c. of warm normal saline solution. The salt solution with the dissolved atropin is then injected subcutaneously in the axilla. Ether is used as the anesthetic. It is administered from a small improvised mask which admits of the condition of the comb being seen during the operation. Depending on how hard the ether is pushed, the bird is ready for operation in from fifteen to twenty minutes after the anesthesia is begun. The dosage of 1/200 grain atropin to a bird may seem large, but we have never been able to see the slightest bad effect from it, provided the administration of ether was begun immediately after the injection of the atropin.

1. Cushny, A. R.: Text-Book of Pharmacology, pp. 285-289.
2. Cushny: Text-Book of Pharmacology, p. 175. Schäfer, E. A.: Artificial Respiration in its Physiologic Aspects, THE JOURNAL A. M. A., Sept. 5, 1908, li, 801, Schäfer says: (*loc. cit.*, p. 803): "Both these dangers are obviated by the hypodermic administration, prior to the operation, of a small dose (1/50 grain) of atropin sulphate. It seems strange that anesthetists do not generally adopt this simple precaution as a routine method."

DIAGNOSIS AND TREATMENT OF CATARRHAL PNEUMONIA COMPLICATING INFECTIOUS DISEASES OF CHILDHOOD

ARTHUR STERN, M.D.
ELIZABETH, N. J.

The statistics of the various boards of health in the large cities of the United States show clearly the danger of the pulmonary complications of infectious diseases in childhood. In New York City, during the week ended Jan. 4, 1908, 581 cases of measles were reported to the health department, with 32 deaths, and if it is remembered that the majority of these deaths were due not to the disease *per se* but to the lung complications, it will be seen that these constitute an important factor in the management of the case.

The danger is in direct proportion to the size of the bronchi affected. When only the large bronchi are involved the danger is comparatively small, but as soon as the inflammation extends to the bronchioles, with exudation into the alveoli, the situation becomes serious.

The physical diagnosis of these conditions is not easy. The bronchopneumonia following bronchitis can be diagnosed only if the amount of healthy lung tissue is not large enough to mask the infiltration; in other words, if there are many infiltrated spots spread over the lungs, symptoms of bronchitis may be made out by auscultation, and the extremely rapid respiration will tell more than the ear.

The danger and prognosis in these cases may be just as grave as in cases in which there is perceptible flatness on percussion. Therefore, I always base my prognosis on the pulse, respiration and general facial expression rather than on the percussion and auscultation of the child's thorax. Sometimes, no matter how careful I have been in examining a child, I could hear nothing but signs of a general catarrhal condition of the larger

bronchi, and yet the rapidity of respiration already showed the existing deeper involvement.

In the majority of my cases the bronchopneumonic infection was nearly always well developed before I had a chance to see the patients. In measles and whooping cough the physician is generally consulted when additional trouble has been existing several days. If called early, and then only, I have always used syrup of ipecac in teaspoonful doses, repeated often enough to produce copious vomiting and then stopped. It has seemed to me that a large depletion of stomach contents acts, probably reflexly, on the obstructed channels of the lung.

In treatment of children I advocate hydrotherapy. There is such a broad field for cold and hot water in the treatment of the sick child that it seems strange that physicians do not avail themselves of this handy and, if used with common sense, effective remedy.

If the child has high fever I use cold water applications, having the water the same temperature as the room, in the following manner: A long towel is folded so that when wrapped around the child it reaches from the axillæ to the navel. It is then dipped into water, well wrung out, and put around the child; then a flannel cloth, broad enough to cover the towel, is put over that. A fresh application should be made every hour or two, but the child must not be disturbed while it sleeps, a fact which must be impressed on the parents.

In strong children water colder than the temperature of the room may be used. Very often in connection with this I recommend hot baths twice daily, of five minutes duration each time; these I find are always followed by a good rest.

If there is very little rise in temperature, especially in cases of whooping cough complicated with bronchopneumonia, I frequently apply warm water to the chest, putting a piece of oil silk between the towel and the flannel, but here extreme care must be taken to avoid infection of the skin, which happens occasionally when oil silk is used between the layers; and it is necessary to apply a mild ointment or cold cream to the skin of the thorax to avoid furuncles or eczema.

So far as medication is concerned, physicians can not boast of much success in influencing these conditions. Of the modern products the guaiacol and creosote preparations have some value. It is my practice to order, according to age:

R.	gm.		
Creosoti carbonatis	1 to 4	or	grs. xv to ʒi
Sacchari alb.			
Mucilago acaciæ, āā	q. s. 90		ʒiii

M. et fiat. emulsio cum aqua destillata.
Sig.: One teaspoonful every two hours.

This is readily taken by the sick child and may be continued at intervals for some time without untoward results.

In desperate cases I have used mustard applications, recommended by Heubner of Berlin, occasionally with surprising results.

I quote from him as follows: Take a pound of mustard flower and to this add a quart and a half of warm water, stir until the odor of mustard is perceptible. A towel is dipped into this mixture, wrung out, and wrapped around the child from the shoulders to the feet, and then a woolen blanket is put over this. The neck must be well covered so that the mustard does not affect the eyes and lungs. The child stays in this dressing for from ten to thirty minutes, or until the skin is red. It is then washed with lukewarm water, after which a bath of five minutes duration in lukewarm water is given. Then a moist warm towel is put around the chest. This procedure may be repeated the next day. Sometimes the result is surprising, and a life despaired of may be saved.

Fresh air is, of course, a *conditio sine qua non*, and while I have not much experience with the cold air treatment of pneumonia, yet I think that the happy medium will apply here as well as in other diseases.

In conclusion I would like to say once more that medication plays an inferior rôle in the treatment of these, if I may call them so, infectious pneumonias of childhood, while hydriatic procedures, as mentioned above, in connection with a generous liquid diet of milk, broths and eggs, will succeed in saving many a child who seems to be at death's door.

224 East Jersey Street.

Therapeutics

ACNE

This troublesome condition or disease, which is so frequent in adolescence and may so many times persist for years, should always be taken seriously. The family physician is more and more frequently consulted early in the disease, and too frequently dismisses the young patient with some recommendation or treatment that is very likely to prove ineffectual. Possibly the increased dust and dirt of our cities causes an increased tendency to the formation of comedones and subsequent acne indurations by quickly coating and sealing the little sebaceous ducts of the face, especially if, as is frequently the case, the patient has a profuse oily secretion.

It is not the purpose of this article to describe all the preparations or local treatments that may or should be used for facial acnes, but to urge, in the beginning of such troubles, a careful investigation of the patient's digestion, general health and habits, as we know that metabolic disturbances (which are so often present during adolescence) and preventable gastrointestinal indigestion are often the primary causes of acne. Also a carelessness and an actual lack of cleanliness, or improper hygiene of the face, is frequently the cause of the development of comedones and acne.

The young boy and young girl, especially in their early teens, are very careless as to the movements of the bowels. Constipation is the bane of America, and its beginning is generally traceable to gross neglect during this period of life. The young child is carefully watched by its mother and the condition of its bowels is known. The boy or girl of 15 is not so watched, and both attending schools, later colleges and seminaries, or hastening to stores or factories, think they have not time to attend to this call of Nature directly after breakfast, the physiologic time for a bowel movement. Young boys and girls go to bed too late, and dislike to arise in the morning until the very last moment, and then have not time to attend to this necessary function.

They also, because of this lack of time, swallow their breakfasts almost without chewing. This is especially true with mushy, gelatinous cereals, and particularly true of oatmeal. Consequently oatmeal in gummy, sticky, gelatinous masses, the manner in which it is mostly eaten, although considered one of the most nutritious of foods, becomes the most frequent single cause

of indigestion in this country. Thin, well-cooked oatmeal and oatmeal gruels are splendid nutriments. Oatmeal boluses are pernicious.

The enormous consumption of sweets, candies, ice cream soda and the frequent drinking of soda fountain products is another and increasingly frequent cause of the indigestion that predisposes to acne, and this is another failing of adolescence. Any gastrointestinal indigestion, which includes loss of appetite, perverted appetite, constipation, and abnormal looseness of the bowels, should be corrected and properly treated before it could be hoped to cure or prevent the further development of an acne. Even if there is no actual apparent indigestion, sugars, spices, abnormal amounts of tea and coffee, greasy fried stuffs and hot breads, pancakes, oatmeal and impure syrups should all be removed from the diet.

Many acne patients are anemic, and some girls are chlorotic, and such patients, of course, are improved by the administration of iron or arsenic, or both.

If, in a girl, menstruation is irregular, disturbances seem to be present that predispose to acne, and while it is perfectly correct to tell a mother with a daughter who is apparently well but whose menstruation seems difficult of establishment, or having once begun is exceedingly intermittent, that Nature will take care of this function, it is many times better to correct that function, as having once begun, the girl is certainly better with its perpetuation. A careful investigation into the condition of such a female patient will often show either a malcondition of the blood and lack of proper nutrition, or a disturbance of the thyroid gland, either a hypothyroidism, the most frequent condition, or a hyperthyroidism possibly. In any of these conditions the patient can be improved by proper treatment.

Some patients with acne, especially girls, are suffering from denutrition from over-activity, mental or physical. The parents are largely to blame for this. They stimulate and push the young girl beyond her strength. They are proud of her acquirements, and they want her to excel in everything, or at least have a knowledge of everything. Then the girl is stimulated by the never-ending school competition. And to cap the climax of the mental activity, she is urged as a proper thing, and the parents, teachers and profession think it is proper, to take a course in physical culture. While physical culture is needed and wise, the manner in which it is carried out is often the last straw to break down the physical vigor of a girl who is working up to the limit of her strength. Too many hours of mental work, and too severe "physical culture," are the cause of many a permanent breakdown in the young girls of America, and many times a troublesome acne is an indicator of both nervous strain and physical debility.

Frequently, however, exactly the reverse of this condition occurs, and the flabby, phlegmatic girl or boy who is unwilling to take sufficient physical outdoor exercise develops the unpleasant condition of acne, and he or she should be stimulated to greater activity.

It resolves itself into the axiom, then, that no patient with acne can be well treated or cured without a careful and complete investigation into the whole life of that patient.

Acne is likely to occur, and can never be cured, unless the young boy or girl is taught and carries out the hygiene of thoroughly cleansing the face before going to bed. The oily secretions of the day have accumulated the dust and dirt of the atmosphere, and at night this dust dries the secretions and blocks the channels of exit. Comedones, indurations, acne nodules and pustules are the result. A patient who has profuse oily secretions of the face should not use hot water on the face. Also it is well never to use cold water on the face. The hot water tends to increase the oily secretion by causing congestion, and the cold water tends, by its reaction, to do the same thing. The easiest, most thorough way of cleansing the face is to remove the dust and dirt with a pure cold cream. A lump of the cold cream the size of a hazelnut or hickorynut is taken in each hand and rubbed gently over the skin. The face is then wiped off with a soft towel and then washed in lukewarm water without soap. In some cases it may be best to inhibit the profuse secretion of the sebaceous glands by bathing the face once or twice a day with dilute alcohol, bay rum or other astringent solution.

As above stated, it is not the purpose of this article to delineate the local treatment of acne, but to urge that more effort be made to prevent the complete development of this disease, which, while not in itself a disturber of the general health, is a cause of acute mental suffering, in the young girl at least.

OBESITY

Moritz, in the *Muench. med. Wchnschr.*, July 28, 1908, advises an exclusive milk diet to reduce obesity, the average patient receiving about two quarts of milk a day. This is divided into a pint at 7:30 a. m., a half-pint at 10 a. m., a pint at 1 p. m., a pint at 4 p. m., and a half-pint at 7 p. m. This quantity should be increased or diminished, depending on the loss of weight. If the loss is too rapid the milk is increased, and if too slow the amount is diminished. The milk may be taken cold or hot, with or without lime water, or some soured milk preparation may be substituted for the sweet milk.

This method of treatment is so simple that it would seem advisable to give it a trial in almost any instance. In kidney insufficiency it would be good treatment. In cardiac insufficiency, with a tendency to dropsy, it would not be good treatment, on account of the amount of liquid the patient would receive, it being better to reduce the liquids when there is cardiac or circulatory insufficiency.

If the bowels do not move freely on this milk diet some laxative should be coincidently administered.

It is also supposable that some patients who must work actively would become very weak on this milk diet, and such patients should be allowed some meat once a day or one or two eggs a day.

TAPEWORM

Schilling, in the *Therap. Monats.*, April, 1908, gives his treatment, which is as follows:

R.	gm. or c.c.		
Oleoresinæ aspidii	8		3ii
Pulveris jalapæ	50	or	gr. viiss
Syrupi	30		fl.3i

M. et Sig.: Take one-half, with water, at the time directed, and the remainder in half an hour. [Shake well.]

Schilling advises the administration of a cup of black coffee fifteen minutes before the administration of the male fern. For the next few hours the patient should fast, and if the worm is not expelled in three or four hours he advises an enema of a quart of warm water.

The above dose of male fern is large, and it would seem wise to give a saline cathartic, two hours after the first dose of it, to hurry its exit from the body, lest too much absorption should occur.

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SATURDAY, JANUARY 30, 1909

THE PHARMACOLOGY OF TOBACCO SMOKE

We have had much less fact than fancy in our notions concerning the effects of smoking, for to every pharmacologist able accurately to determine the facts there are millions of zealous experimenters who are prepared to settle the whole matter at a moment's notice on the grounds of their own experience, and still other millions of opponents who are equally willing to advance opinions on the basis of their inexperience. For example, we have the ever-prominent opposition to the cigarette, which prejudices opinion and even legislation as actively as ever, in spite of the fact that the claims on which this prejudice is based, namely, that cigarettes are "doped" with opium and other expensive drugs by extravagant manufacturers, and that rice paper is very poisonous, have been disproved over and over again by chemists and by commissions. Prejudice crushed to earth will rise again, to paraphrase, and the anticigarette propagandist is about as willing to listen to calm facts as an antivivisectionist is to hear uncensored statistics concerning diphtheria and antitoxin. Indeed, as to the actual chemistry and pharmacology of tobacco smoke, physicians themselves seem to have relied more on tradition than anything else, for certainly the average physician appears to retain an idea that the nicotin is destroyed in the burning of the tobacco, and that all the effects, sinister and beneficent, are produced by the combustion products, of which the pyridin bases have the most unsavory reputation. This widely prevalent opinion dates back to 1871, when Vohl and Eulenberg[1] reported that they had been unable to obtain a trace of nicotin in the smoke from 100 cigars, and, therefore, concluded that the pyridin bases must be the active constituent of the smoke, and their conclusions have passed current with most physicians and laymen up to the present time, despite numerous contrary reports by other investigators. Heubel, Gautier, Thoms, Schmidt and others, one after another, reported the finding of nicotin in tobacco smoke, and although one positive finding should offset many negative results, in this instance the reverse has been the case. Habermann and Ehrenfeld find that with some kinds of cigars two-thirds of the nicotin passes over into the smoke, while with other brands the smoke may contain but one-twelfth of the alkaloid.

In a recent paper from the Pharmacological Laboratory of Cambridge University, W. E. Lee[2] has reported several interesting observations on this subject. By passing the smoke from 100 grams of tobacco through saline solution he was able to collect 1.165 grams of nicotin, representing one-half of the total nicotin of the tobacco, while but 0.146 gram of pyridin bases, chiefly pyridin and collodin, was obtained. A sample of Virginia tobacco yielded an extract (1 gram of tobacco extracted in 100 c.c. salt solution) which caused a rise in blood pressure of 56 mm. mercury in a cat, while the same tobacco after being prepared for cigarettes produced a rise of 42.4 mm., showing that not a little of the substance which raises blood pressure (nicotin) is destroyed in this process. A very interesting demonstration of the influence of the form in which the tobacco is smoked was the following: A Manila cigar and a cigarette of Virginia tobacco were so burned that the same amount of tobacco was consumed in equal time, and the effect of the products of the combustion determined; it was found that although the cigarette tobacco used contained nearly twice as much nicotin as the cigar tobacco, yet the smoke of the latter was twice as toxic as the cigarette smoke. This is explained as follows: During the slow combustion of a cigar, as in ordinary smoking, immediately behind the point of combustion is an area in which the water and other volatile substances condense; during the act of smoking the hot gases pass through this moist area and volatilize the more volatile principles of the tobacco, of which nicotin is one. Therefore the smaller the moist hot area behind the point of combustion, and the more rapid and complete the combustion, the less likely is the smoke to contain volatile toxic bodies; hence a cigarette or a slender cigar will yield fewer of these products than a thick cigar, and many smokers can testify that a thick "fat" cigar has much more effect than a long slender cigar of similar tobacco. The unpleasant effects that the unaccustomed smoker experiences on relighting a half-finished cigar or pipe are explained on the same basis.

An interesting series of pharmacologic studies on experimental animals and on man also furnish evidence that the chief active constituent of tobacco smoke is nicotin. The effects on cardiac and involuntary muscle of nicotin are almost exactly the same as that of the solution obtained by passing tobacco smoke through water, except that in the latter there is some antagonism between the tonus-depressing effect of the collodin of the smoke and the stimulating effect of the nicotin. Pyridin seems to be entirely without influence in any doses such as could be obtained with even a very large amount of smoke. The effect of smoking on the blood pressure in man was very striking in the case of novices, an initial rise of pressure being followed by a very severe and sudden fall (from 128 mm. to 78 mm. in

1. See a recent review by J. Dixon Mann, British Medical Journal, Dec. 5, 1908, p. 1673

2. Quart. Jour. Physiol., 1908, i, 335.

one case) at a time when the patient presented the familiar condition of "intense pallor of skin, cold sweat on forehead, feeling very faint and weak. Cigar three-quarters finished; stopped smoking." Even the habitual smokers showed a slight rise of blood pressure when smoking, although the rest of the description did not apply to them.

The action, then, of tobacco smoke on man is exactly what might be expected from a knowledge of the action of nicotin; while the stimulation stage lasts the blood pressure is raised, then as the nerve cells are depressed the blood pressure falls, this fall being perhaps augmented by the depressive action of the pyridin bases. It can scarcely be doubted that the influence of the rise in blood pressure on the circulatory system may be injurious in some cases. While many persons can and do smoke in moderation without any noticeable effects ever being manifested, there are cases in which an hereditary tendency to arterial disease seems to be seriously accelerated by tobacco. Not only can aortic atheroma be produced experimentally in rabbits by injecting either nicotin or infusions of tobacco or by inhalation of smoke,[3] but not a few cases have been observed in man in which there seems to have been no evident cause for an extensive arteriosclerosis other than excessive smoking.

BACTERIAL VIRULENCE AND RESISTANCE TO PHAGOCYTOSIS

It is a well-known fact that high degrees of virulence in certain bacteria are associated with absolute resistance to phagocytosis, at least under the influence of normal serum. Metchnikoff made the observation early in the course of his studies of phagocytosis in infectious diseases and formulated a general law to the effect that as a microbe grows in virulence its resistance to phagocytosis increases. Probably the best known examples of this phenomenon are furnished by pneumococci and streptococci.

A number of explanations have been advanced to account for the resistance to phagocytosis on the part of virulent strains of these and other bacteria. At first they were believed to produce substances that repelled leucocytes and caused a "negative chemotaxis." Then it was also urged that such bacteria give rise to substances that injure and even kill the phagocytic cells, so-called leucocidal and leucotoxic substances, of which the staphylolysin of infective staphylococci is the best example. Similar substances have been found also in the filtrates of broth cultures of virulent streptococci. These substances may cause morphologically demonstrative disintegrative changes in leucocytes.

While leucocidal substances no doubt promote the infective powers of the cocci, yet they do not explain the resistance of virulent cocci to phagocytosis, more particularly because it has been shown by Marchand and others that virulent streptococci and pneumococci even after being washed and killed by heat still resist phagocytosis.

Avirulent strains of the same cocci remain phagocytable although suspended in filtrates of cultures of virulent strains. For these reasons Marchand advanced the hypothesis that virulent streptococci are non-phagocytable because of their physical state.

When the rôle of opsonins in phagocytosis was discovered the question at once arose as to the relation between the opsonin and virulent streptococci, pneumococci and other bacteria. Rosenow[1] took up this question as regards pneumococci and he shows that avirulent strains absorb opsonin in human serum and become phagocytable, whereas virulent strains of the same mother culture do not absorb this opsonin and remain insusceptible to phagocytosis. These properties may be diminished or increased at will by passage through rabbits or cultivation on artificial media. He then proceeds and by extraction of virulent pneumococci in salt solution removes from them a substance (or group of substances) that specifically inhibits the action of human pneumococco-opsonin in the test-tube. Furthermore, he demonstrates that avirulent pneumococci take up this substance and become resistant to phagocytosis and also to some degree virulent for rabbits, while the virulent pneumococci after being extracted absorb pneumococco-opsonin from serum. In other and more succinct form we may say that virulence in pneumococci and the correlated property of resistance to phagocytosis depend on an extractible substance with which a number of highly interesting experiments may be made. For this substance the name "virulin" has been proposed.

This rather startling discovery has been confirmed quite independently by Tchistovitch and Yourevitch[2] in St. Petersburg. Working with pneumococci and dog serum they reach precisely identical results, so far as they go. They do not appear to have studied the virulence of avirulent pneumococci after treatment with extract of virulent strains. The Russian investigators name the substance "antiphagin," which, like Rosenow's "virulin," is specific, that is, does not bind any other opsonin than that for pneumococci, and thermostable, even resisting boiling and consequently wholly different from the still hypothetical aggressin of Bail and his followers.

It is of great moment that virulence and resistance to phagocytosis of pneumococci have received so satisfactory and simple a solution as seems to be the case. A point has been reached for the departure of new and fruitful investigations into pneumococcal and allied infections and further developments will be awaited with keen interest.

3. See the articles by Lee and Mann (referred to above) and by Zebrowski, Centralbl. allg. Path., 1908, xix, 609.

1. Jour. Infect. Dis., 1907, iv, p. 285.
2. Ann. de l'Inst. Pasteur, 1908.

A REMARKABLE TYPHOID CARRIER

In 1854 a newly-married couple moved into a substantial wooden house in the country in Sweden. During the years 1855 to 1865 seven children were born, all growing to maturity without any noteworthy disturbances on account of sickness. The father died in 1896, 88 years old, and was succeeded in the management of the estate by a son, born in 1861. This son married in 1897, but the wife died from eclampsia one year later. In 1901 he married again, and in 1904 the family consisted of husband, wife, two small children, the husband's mother, 79 years old, two maids and a manservant.

At this point Dr. Jundell, from whose report[1] these details are taken, made an extended investigation of the family record as to sickness since 1854, of the premises, and of the living members of the family because of the continued occurrence during all these years of a severe, occasionally fatal, febrile disease that attacked especially newly arrived servants. The first case occurred in 1854, and up to 1908, when Dr. Jundell's report was published, twenty-two different persons were attacked, and in the case of seventeen of these the diagnosis of the family physician or in the hospital to which many were sent was typhoid fever. In the remaining five, and here it concerns mostly the early part of the period, the diagnosis was *Febris gastrica* or *Febris nervosa gastrica.* In the last two cases—the aforesaid son's second wife and daughter—the diagnosis of typhoid fever was fully established by demonstration of typhoid bacilli in the feces and by positive agglutination tests. It is remarkable that these two cases are the only instances known to have occurred among the parents and descendants of the family, all the other cases having been among servants and other persons of the household.

Dr. Jundell's careful investigations show conclusively that the disease was confined strictly to this one family and that the infection was not carried by water or milk in the ordinary manner. The neighborhood was free from typhoid fever during all these years and other households using the same milk and water were not attacked. Bacteriologic examination of the floors and walls of the house gave negative results as to typhoid bacilli. The individual cases always occurred singly and so far apart in point of time from other cases that contact infection from fresh cases can not account for the whole series. The family itself felt as if it were especially pursued by typhoid fever, and for some time back persons who had had typhoid were sought when new servants were wanted. The mystery receives a satisfactory explanation, however, by Dr. Jundell's demonstration that the grandmother is a typhoid carrier, and apparently a persistent one, because the feces were found even richer in typhoid bacilli in 1908 than in 1904, when they were first examined. At times the feces seemed to contain typhoid bacilli in almost pure culture. The demonstration that it actually concerns typhoid bacilli seems conclusive. No other member of the family was found to harbor bacilli at the time when Dr. Jundell made his examinations.

Of course it can not now be proven that all the cases of typhoid fever in this protracted series were derived from this carrier, but on the basis of the facts that are at hand the conclusion that in this case carrier infection played an essential rôle certainly is fully warranted. Two points remain to be noted: (1) that there is no record that the only demonstrable carrier in this family epidemic ever had typhoid fever herself, and (2) that of the nine children in question only one is known to have had the disease, whereas of the total number of cases twelve occurred among maids whose offices under the circumstances naturally would bring them into closer contact with articles contaminated by the carrier. Jundell also suggests that in the case of the children light attacks may have passed off without being recognized. At all events, this record of family typhoid is full of interest as an example of the rôle that a typhoid carrier may play in maintaining and spreading typhoid fever.

1. Hygiea, Festband, 1908.

CALCIUM METABOLISM AND TETANY

Although the forms of tetany are numerous, if we classify them according to the causative or associated conditions, such as gastric dilatation, pregnancy and lactation, osteomalacia and rickets, and operative extirpation of the parathyroid glands, yet in all forms the general features of the disease are similar. The characteristic symptoms depend on increased excitability of the central nervous system, which is in a state of very unstable equilibrium, and much light is now being cast on the cause of this instability of the nervous system as well as on the pathogenesis of tetany and the tetanoid symptoms through the study of the parathyroid glands both experimentally and clinically. We have previously referred to many of the steps of our progress and wish here to discuss some of the most recent developments.

By the work of numerous investigators it has been conclusively established that removal or destruction of the greater part of the parathyroid tissue leads to a typical condition of tetany, both in man and the experimental animals, and at present the chief question concerning this relationship between the parathyroids and tetany is as to how large a proportion of the cases of clinical tetany with their multifarious etiology are due in whole or in part to defective parathyroid functionation. Certain it is that in tetany following operations on the thyroid in which the parathyroids are removed or injured, the effect of subcutaneous or intravenous injection of extracts of the parathyroid is a specific symptomatic cure.

As with the thyroid itself the effective extract may come from some entirely different animal species, but it differs from thyroid extract in not being effective when

given by mouth. The active constituent of the parathyroids is certainly entirely different from that of the thyroid, for it does not contain iodin, and is contained in the nucleoprotein that can be separated from the gland, as first shown by Beebe. MacCallum and Voegtlin have also found that the nervous manifestations of tetany following parathyroidectomy can be held in check by administration of calcium salts, thus adding another instance of corroboration of the pioneer observations of Jacques Loeb. Loeb observed that the injection into the animal body of any salt liable to precipitate calcium causes twitching of the muscles, and he suggested the possibility of using calcium salts in treatment of spasmodic affections. Sabbatin also found that the irritability of the cerebral cortex is reduced by the local application of calcium salts, and increased by the application of substances which precipitate calcium; and numerous other observers have since reported results of similar import. Since in tetany the most conspicuous symptoms are due to abnormal excitability of the cerebral cortex, the use of calcium salts to check these symptoms was a logical step which was justified at once by the striking results obtained.

In a recent paper MacCallum and Voegtlin[1] have reported their later studies on this subject, which contain much of interest. They find that salts of potassium and sodium have no favorable effect on tetany, while any beneficial effect the magnesium salts may produce is masked by their toxicity. The results of animal experiments have been found to hold good when applied clinically, a patient with tetany following thyroidectomy for malignant struma being relieved in the course of one day by administration of calcium lactate.

In animals after parathyroidectomy there occurs an increased elimination of calcium in the urine and feces, which results in a marked reduction in the calcium content of the tissues, especially of the blood and brain, a finding in complete harmony with the observation of Quest that in tetany the calcium content of the brain is remarkably lowered, and also with the occurrence of tetany during lactation and in osteomalacia and rickets.

Apparently the parathyroid secretion has an influence on the calcium exchange in the body, perhaps because in the absence of this secretion there develop abnormally products of metabolism which combine with and extract the calcium from the tissues. "The mechanism of the parathyroid action is not determined, but the result, the impoverishment of the tissues with respect to calcium and the consequent development of hyperexcitability of the nerve cells and tetany, is proven." Tetany, therefore, would seem to be, at least in many cases, the expression of a hyperexcitability of the central nervous tissues due to the withdrawal from them of calcium, and this withdrawal of calcium may conceivably be the result of defective supply, of excessive elimination because of parathyroid incompetency, or of a drain on the calcium supply for physiologic purposes or because of abnormalities in calcium metabolism. Already there is evidence to connect the parathyroids with the abnormal calcium metabolism of osteomalacia and rickets, and it may be found that it is only in the presence of at least a relative insufficiency of the parathyroids that the usual predisposing causes of tetany bring about this condition.

1. Jour. Exper. Med., 1909, xi, 118.

THE ADVANTAGES OF TABULATING CLINICAL RECORDS

The graphic method of recording temperature, pulse and respiration by means of the well-known chart is such an obvious advantage in the precision and clearness with which it presents the changing aspect of these factors that it has been very generally adopted, particularly in recording the course of acute febrile diseases. Almost as valuable in its power to project the changing features of disease, acute or chronic, in such a manner that the mind necessarily conceives a broader picture of the condition is the method of tabulating the findings of variable features such as the weight, conditions of the blood or of the gastric or renal functioning as discovered in the laboratory, the blood pressure, etc. There are many other factors which do not lend themselves readily to graphic methods of expression but which may be conveniently tabulated. In preparing a case history to present before a medical society or in a journal, where it is desired to bring out as clearly and impressively as possible the significance of variable factors, the table is the natural means of expression, but in the day's work of the ordinary clinician, in the study of the cases which are never to be reported, how seldom is this efficient aid to diagnosis, to prognosis, to treatment, utilized! The habit of appending to every case record a table of the variations of at least some of the important factors, which may be glanced over and grasped in an instant, will be found to do much toward correcting that mental myopia to which all are in some degree subject.

ANTIVIVISECTION DISINGENUOUSNESS

In the report of an inquest[1] on a child who died from the results of an injury, after the casual dressing of a wound of the skull at the National Antivivisection Hospital, London, the following illuminating instance of the disingenuousness of antivivisection tactics appears. The coroner, quoting from a prospectus of the hospital, asked what was meant by the expression found there: "No experiments on patients." The witness, resident medical officer at the hospital, replied: "I do not know that any hospital has experiments on patients." The coroner rejoined: "Is it usual in general hospitals to experiment on patients?" To which the representative of antivivisection replied: "No, sir; but other hospitals are equally at liberty to put that." Can the sophistry of this answer be rendered clear to the gentleman in question by a personal application of the principle? If in a discussion he were to assert a certain thing and his

1. Lancet, Jan. 9, 1909, p. 124.

opponent were to assert the opposite, and add the words: "and I am not a liar," it is not difficult to imagine what kind of an implication he would place on this oblique method of assertion, and further that his outraged dignity would not be appeased by the suggestion that he himself might have made a like statement had he chosen to do so. A direct misstatement of the facts in a controversy may be due to ignorance or misapprehension, but this roundabout method of asserting by implication at once suggests both malice and cowardice.

THE RESCUE OF THE REPUBLIC—AN OBJECT LESSON IN "PURPOSELESS" RESEARCH

A large number of people fail to appreciate the enormous value to medical science, from a practical viewpoint, of "mere laboratory work," in the more abstruse problems of physiology, pathology, general biology, etc. They seem to demand that all investigation should be undertaken with a well-defined application in view. They are impatient of investigations whose sole object is to transfer everything possible from the region of the unknown to that of the known. Yet but for this seemingly aimless work performed by the pioneers of medical science in laboratory experimentation many of the triumphs of applied medicine would be impossible. It is well, therefore, to emphasize the object lesson in this direction so recently afforded by the application of similar laboratory work in the physical sciences, through wireless telegraphy, in the rescue of almost the entire personnel on board the ocean liner, the *Republic*. The world just now is ringing with this splendid achievement of the practical work of Marconi, but it forgets, or perhaps has never realized, that this work was rendered possible only through the previous researches of Hertz into pure and unapplied science, which resulted in the discovery of the waves that bear his name. Yet it is safe to assert that no such application as has subsequently been made of them was present in the mind of that scientist while engaged in pursuing elusive knowledge in any direction in which it might lead him.

Medical News

CALIFORNIA

Personal.—Dr. Clarence A. DePuy, Melrose, sailed from San Francisco, January 3, for China and Japan.——Dr. William Ophuls has been unanimously re-elected president of the San Francisco Board of Health.——Dr. Arthur T. Piercy, Oakland, was seriously injured in a collision between an automobile and an electric car recently.——Dr. William F. McNutt, Jr., San Francisco, was seriously injured by being thrown from an automobile against a stone wall, December 18.——Dr. Emile Schmoll, San Francisco, fractured his right arm while attempting to crank his automobile, December 22.

Lane Lectures.—The twenty-seventh annual course of Lane lectures began at Cooper Medical College, January 8, and will be continued on each alternate Friday night. The following is the complete list of lectures:

January 8, "Smallpox and Vaccination," Dr. Emmet Rixford; January 22, "San Francisco's Milk Supply," Dr. W. F. Snow, Stanford University; February 5, "First Aid to the Injured," illustrated, Dr. George B. Somers; February 19, "Medicine and Religion," Dr. William F. Cheney; March 5, "Hypnosis," Dr. A. M. Gardner; March 19, "How Disease Is Transmitted," Dr. Rufus L. Rigdon; April 2, "The Crusade Against Tuberculosis," Dr. Joseph O. Hirschfelder; April 16, "The Medical Inspection of Schools," Dr. William Ophuls; April 30, "What the Doctors Are Doing," Dr. George F. Hanson; May 14, "Gallstones," Dr. Stanley Stillman.

COLORADO

Personal.—Dr. and Mrs. Bernard Oettinger, Denver, have gone to Europe.——Dr. Edward Delehanty, Denver, will shortly leave for Germany.——Dr. Clara M. Moore, Denver, has been appointed physician of the woman's department of the State Hospital for the Insane, Pueblo.——Dr. J. J. Pattee, Pueblo, has been appointed oculist and aurist at Minnequa Hospital.

Publicity Bureau.—Colorado State Medical Society has organized a press bureau for general educational purposes to inform the public as to the symptoms of the commoner communicable diseases and how these diseases may be guarded against by proper observation of sanitary rules. The headquarters will be at Montclair, and Dr. Orville D. Westcott, Denver, is secretary of the committee.

Mortality of Denver.—During 1908 there were 3,540 deaths reported in Denver, 27 more than for 1907, 472 more than for 1906, and 716 more than for 1905. Diseases of the respiratory apparatus caused 557 deaths; diseases of the nervous system, 351; digestive diseases, 332; circulatory diseases, 322; genito-urinary diseases, 260; and violence, 193. Of the deaths, 157 occurred in early infancy, and 102 in old age.

GEORGIA

Fraud Order Issued.—As a result of an investigation by a postoffice inspector the Postoffice department is said to have issued a fraud order, January 13, against Dr. Rosa F. Monnish of Atlanta, prohibiting her the use of the mails and forbidding the mailing of any newspaper containing an advertisement of her place of business. She is charged with fostering immorality and profiting therefrom. The fraud order is also said to apply to Dr. William A. Monnish, who is referred to as her "accomplice."

Personal.—Dr. Theodore E. Oertel has been reelected a member of the governing board of the City and Lamar hospitals, Augusta.——Dr. Bernard Wolff has been elected president, and Dr. Cyrus W. Strickler, vice-president of the Atlanta Board of Health.——Dr. Theodore E. Oertel, Augusta, has been elected president, and Dr. William C. Kellogg, Augusta, vice-president of the Richmond County Antituberculosis Society.——Dr. Millard F. Matthews, Athens, has been made health officer of Clarke County.

ILLINOIS

County Tuberculosis Institute.—Lake County Tuberculosis Institute, four miles north of Waukegan, which was started in July last, now has a capacity of eighteen in winter and thirty in summer. Organization of the institution was effected September 3. Dr. John C. Foley is president; Dr. William C. Bouton, secretary, and Dr. W. H. Watterson, manager-treasurer and physician.

Chicago

Hospital Changes Name.—The Practitioners Hospital has changed its name to Abraham Lincoln Hospital. Dr. Michael Goldenburg, 72 E. Madison St., director of clinics in the dispensary attached to the hospital, announces that there are eight vacancies on the staff.

Get-Together Dinner.—The Chicago Medical Society and the Chicago Retail Druggists Association held their annual "Get-Togetner Dinner" at the Auditorium, January 19, in furtherance of the national movement to establish a code of medico-pharmaceutical ethics. Dr. Alfred C. Cotton presided as toastmaster.

Personal.—Drs. William A. Fisher, Adolphus G. Wippern, H. W. Woodruff, Thomas Faith, and John R. Hoffman have been reelected directors of the Chicago Eye, Ear, Nose, and Throat College.——Dr. Jesse M. Yonan has recently returned after eleven years spent as a medical missionary in Persian Kurdistan.——The Illinois Branch of the American National Red-Cross will organize a first-aid legion on military basis, of which Dr. Gustavus M. Blech has been appointed director-in-chief by Dr. Louis L. McArthur, chairman of the executive committee.

Milk Commission.—Declaring certification of milk in Chicago a failure, the Chicago Medical Society has appointed a milk commission, consisting of Drs. Isaac A. Abt, Marcus P. Hatfield, Frank S. Churchill, James W. Van Derslice, Charles S. Bacon, and Samuel J. Walker, to take charge of certified milk and furnish labels to dairies that have complied with regulations. The commission will appoint a physician whose duty shall be to look after and testify to the health of employés of every dairy whose milk is to be certified.

A chemist and bacteriologist will also be selected to examine the milk.

Health Conditions Improved.—Material improvement in health conditions was noted during the week ended January 23. There were 101 fewer deaths than in the preceding week, and 65 less than in the corresponding week of 1908. There were 46 fewer deaths from influenza, 28 fewer from tuberculosis, 21 fewer from pneumonia, 15 fewer from nervous disease and 6 fewer from typhoid fever than in the corresponding week of 1908, while deaths from diphtheria were increased by 12, nephritis by 14, and heart disease and cerebrospinal meningitis by 7 each. There were 905 cases of contagious diseases reported during the week, 88 more than for the preceding week, distributed as follows: Scarlet fever, 228; diphtheria, 175; tuberculosis, 119; measles, 110; chickenpox, 101; pneumonia, 55; typhoid fever, 46; whooping cough.18; smallpox, 2, and diseases of minor importance, 52. Two cases of smallpox were found during the week, both unvaccinated men, one from Minnesota, and one employed on a railway running between Chicago and Pekin, Ill. At the latter place, it is reported that smallpox has existed for some time.

MARYLAND

Postgraduate Club.—The Springfield Hospital Book and Journal Club has been formed by the staff of Springfield Hospital and physicians of the vicinity. The object of the association is to follow the outline of study promulgated as a postgraduate course by the American Medical Association. Dr. J. Clement Clark is president, and Dr. John N. Morris secretary of the club.

Personal.—The directors of the Maryland State Tuberculosis Sanatorium have accepted the resignation of Dr. Bayard T. Crane, acting superintendent, and have elected as his successor Dr. Victor F. Cullen, formerly resident surgeon at St. Joseph Hospital, Blue Ridge Summit, Pa.——Dr. Frank W. Jarrett, Towson, is reported to be seriously ill.——Dr. Isaac A. Barber, Easton, is ill at Johns Hopkins Hospital, Baltimore.——Dr. Charles W. Rose, president of the Talbot County Medical Association, is reported to be seriously ill with pneumonia at his home in Cordova.

Baltimore

Adjunct Faculty Elects.—The Society of the Adjunct Faculty of the Department of Medicine of the University of Maryland has elected the following officers: President, Dr. Joseph W. Holland; vice-president, Dr. A. Duval Atkinson; secretary, Dr. Roscoe C. Metzell, and corresponding secretary, Dr. Arthur M. Shipley.

Personal.—Dr. Louis Seth, assistant resident physician at University Hospital, has been compelled to resign on account of ill health and has gone to the State Sanatorium for Tuberculosis.——Drs. Henry M. Baxly, Edward A. Munoz, and Edward E. Mackenzie have been appointed physicians to the Baltimore General Dispensary.——Dr. W. H. Higgins has been appointed a member of the staff of Johns Hopkins Hospital, and Dr. S. Griffith Davis has been appointed assistant to Dr. Harvey W. Cushing.

MASSACHUSETTS

Pure Milk Supply for Lawrence.—The Medical Club has appointed a committee consisting of Drs. W. Hall Coon, William H. Merrill, and George B. Largent to arrange for a suitable milk supply for the city of Lawrence.

Personal.—Dr. Mark W. Richardson has been elected secretary of the State Board of Health, vice Dr. Charles Harrington, deceased.——Dr. Gerald Blake has been appointed assistant in the Harvard Medical School.——Drs. Camillus T. Warner, Thomas F. McCarthy, William S. Richardson and Eugene G. Hoitt have been appointed members of the board of trustees of Marlboro Hospital.——The following physicians have been elected trustees of the State Hospital, Quincy: John A. Gordon, Nathaniel S. Hunting and John F. Welch.——Dr. Leonard Huntress has been elected chairman of the board of health of Lowell.——Dr. George F. Miller has been appointed a member of the Gynecologic Society of Carney Hospital, Boston, vice Dr. Eugene McCarthy, who has been appointed city physician of Fall River.

NEW YORK

Diphtheria Prevalent.—Niverville, Columbia county, is said to be having an epidemic of diphtheria. The principal of the public schools is ill with the disease and the school has been closed for two weeks.

Eye Hospital Incorporated.—The State Board of Charities announces that it approves the certificate of incorporation of the Howe Eye Hospital of Buffalo. Through this certificate Dr. Lucien Howe of Buffalo is allowed to provide for the disposition of his property by the endowment of a hospital which will permit him to continue his present charitable work after the death of himself and his wife.

Vital Statistics.—During November, 10,306 deaths were recorded in the state, equivalent to an annual death rate of 14.5 per 1,000. During the same period 16,075 births were recorded. Deaths from typhoid fever increased 190, from tuberculosis 29, and from diarrhea and enteritis increased 100, while mortality from pneumonia decreased 838 as compared with the corresponding month of last year. The deaths from external causes included 119 suicides, 61 each from fractures, burns and scalds; 39 from drowning; 32 from inhalation of gases, and 99 from railway accidents and injuries.

Personal.—Dr. Martin Cavana, Oneida, has been seriously ill with septicemia due to an operation wound, at his sanatorium at Sylvan Beach.——Dr. Seymour C. Williamson, Canisteo, while making a professional call January 15, fell through a trap door of a barn and fractured his shoulder.——Dr. Alexander J. Dallas, Syracuse, the oldest practitioner of Syracuse, celebrated his ninetieth birthday anniversary, December 31.——Dr. Patrick H. Hourigan has returned to Buffalo after an absence of three years abroad.——Dr. John A. Hoffmeyer, a district physician of Buffalo, has resigned.

Antivivisection Bill.—Senator George A. Davis has introduced a new antivivisection bill into the legislature which has been referred to the judiciary committee. This bill requires that vivisection shall be performed only by persons holding certificates issued under the authority of a college, hospital or incorporated laboratory, or under the authority of the State Commisioner of Health, or a board of health, and in a building registered with the State Health Commissioner. The substance known as curare is not to be considered a general anesthetic. Vivisection experiments may be ordered by a court when considered necessary for purposes of justice.

State Society Meets at Albany.—The third annual meeting of the House of Delegates of the Medical Society of the State of New York was held at Albany January 25, and the one hundred and third annual meeting of the society January 26 and 27. Telegrams received as THE JOURNAL goes to press report a good attendance of the House of Delegates, 69 members being present at the first meeting. Reports of officers and committees for 1908 were presented and discussed, particular attention being given to the state journal and to the publication of the directory. The restriction of advertising of proprietary preparations in the publications of the society was discussed at length, the standard of the Council on Pharmacy and Chemistry being finally approved and adopted. The committee on legislation and the counsel of the state society were instructed to draft a bill for introduction into the legislature permitting the House of Delegates to select the time and place of the annual meeting, the present law under which the society is incorporated being mandatory on these points. A number of amendments to the by-laws were proposed and an unusually large amount of new business was presented to the house. The report of the committee appointed to cooperate with the committee of the American Bar Association on expert testimony was adopted. This committee presented a bill for introduction into the state legislature and designed to remedy the abuse of medical expert testimony. The following officers were elected: President, Dr. Charles G. Stockton, Buffalo; vice-presidents, Drs. Douglas C. Moriarta, Saratoga Springs; and John B. Harvie, Troy; secretary, Dr. Wisner R. Townsend, New York City; treasurer, Dr. Alexander Lambert, New York City. The House of Delegates voted to continue the publication of the directory, also to continue the defense of malpractice suits brought against members. A more detailed report of the session will appear later.

New York City

Personal.—Police Commissioner Bingham has appointed Dr. Francis J. Murray police surgeon to fill the vacancy caused by the death of Dr. Quigley.——Dr. Catherine Collins has been placed in charge of the manufacture of diphtheria antitoxin for the Georgia State Board of Health.

City Has Many Hospitals.—The New York Charities Directory for 1909 states that there are 226 hospitals in this city; of these 58 are general hospitals. The oldest hospital is the New York Hospital, incorporated in 1776. The directory calls attention to the lack of hospital accommodations for advanced cases of tuberculosis.

Milk Depots May Close.—The seven depots for the dispensing of pasteurized milk to babies, maintained by the New York City Association for Improving the Condition of the Poor, may have to close unless the sum of $25,000 is raised immediately. These seven milk stations care for about 500 babies, each station being in charge of a trained nurse who instructs the mothers in the care of their infants.

Tuberculosis Exhibition Closes.—The tuberculosis exhibition at the Museum of Natural History, which has been open since November 30, closed January 17. The exhibit was open to the public for forty-nine days and during this time 750,000 persons visited it. The largest attendance was on December 27, when 63,256 persons visited the museum. The total cost was slightly over $37,000. Of this sum the city appropriated $13,000 and private individuals gave $9,000. There is still a deficit of $16,000.

Coroners Assail Doctors.—In the report of the coroners of New York county, just issued, it is declared that some doctors issue death certificates without having seen the bodies they attempt to describe, and that others demand autopsies simply for the purpose of adding to their own knowledge. It is also stated that undertakers have gone so far as to embalm bodies before they had the permission of the coroner. They suggest that there should be legislation to prevent undertakers from embalming a body until the death certificate has been accepted by the proper authorities, and if rejected, the body should not be embalmed until the coroner has determined and attested the cause of death. The physician should also be compelled by law to examine the body before certifying to death; where a physician has not seen a patient for several days prior to death, the relatives have mistaken suspended animation for death, and the physician has signed the certificate on the word of the friends.

PENNSYLVANIA

New Society.—Women physicians of Pittsburg met in East Liberty, January 7, and organized the Woman's Medical Society of Pittsburg. Dr. Adaline M. Watson presided. At its next meeting officers will be elected and a constitution and by-laws adopted.

Personal.—Drs. Orr H. Shaffer, William S. Ross, Joseph D. Findley and William H. Howell, Altoona; Dr. John L. Brubaker, Juniata; Dr. Henry H. Brotherlin, Hollidaysburg; Dr. W. Albert Nason, Roaring Spring, and Dr. H. B. Deitrich, Williamsburg, have been appointed local surgeons to the Pennsylvania System.——Dr. F. J. Spilman, Connellsville, returned January 5, from a trip abroad.

State Charities' Requests for Aid.—The report of the State Board of Charities was completed, January 19, and was submitted to the legislature, January 20. The report shows that the different institutions applied for appropriations amounting to $19,534,625.01, and that the board has recommended for maintenance and buildings $11,321,669.66. The total amount recommended to the present legislature is $400,769 less than was actually appropriated at the last session. The board has reduced the appropriations applied for by hospitals for maintenance, but has increased the allowances for buildings over that of 1907.

Philadelphia

Personal.—Dr. Henry W. Stelwagon has been elected to associate membership in the Vienna Dermatologic Society.——Dr. W. T. Grenfell, known throughout the world as "the patron saint of Labrador," gave a course of six lectures in Philadelphia and its suburos the week of January 24, under the auspices of the Grenfell Association of America, to secure funds to further the establishment of a fishermen's and seamen's institute at St. Johns, N. F.

VIRGINIA

Personal.—Dr. Lucien C. Smith, Alexandria, is reported to have been appointed chief surgeon to a railroad in Brazil.——Dr. George A. Stover, South Boston, has gone to Richmond to take treatment in the Pasteur Institute.——Dr. Reid White has succeeded Dr. J. Harvey Laird, resigned, as surgeon to the Virginia Military Institute, Lexington.——Dr. Irene Bullard, assistant physician at the Eastern State Hospital, Williamsburg, has resigned.——Dr. Junius N. Stephenson, Petersburg, has been made first assistant physician at the Southwestern State Hospital, Marion.

Instructions Regarding Tuberculosis.—The Board of Health of Richmond has issued a sixteen-page pamphlet, prepared by Dr. Ernest C. Levy, chief health officer, on "Tuberculosis, Its Causes, Prevention and Cure" for use in the upper and middle grades of the public schools of the city. The pamphlet treats plainly of the history and cause of tuberculosis; of the prevalence of tuberculosis in the United States; avers that tuberculosis is preventable and why, and that it is not hereditary; describes the method of spread of the disease and details the precautions that should be taken by tuberculous patients to avoid communicating the disease to others; states that the careful consumptive is not dangerous, that tuberculosis atacks only weakened bodies; gives particulars how the body may be strengthened, and details the method of cure of tuberculosis by fresh air, food, rest etc.——On January 10, under the auspices of the health department of Norfolk, twenty physicians of that city delivered addresses from the pulpits of the colored churches on the ravages caused by tuberculosis.

GENERAL NEWS AND COMMENT

Plague Rats Found.—Inspector Bowman of the Hawaiian Territorial Board of Health has reported to the board that he found 44 dead rats in near proximity to the city stables of Hilo, and that of these 32 were infected with plague.

Tuberculosis Exhibit in Porto Rico.—The National Association for the Study and Prevention of Tuberculosis has shipped a traveling tuberculosis exhibit to San Juan, which will be shown later in all the important towns of the islands.

Personal.—Dr. H. A. Gantt, Aguascalientes, Mexico, who accidentally shot himself early this month, is rapidly improving.——Dr. J. C. Perry, P. H. and M.-H. Service, has arrived at New Orleans from the Canal Zone, en route to Mobile.

Physicians Wanted.—The United States Civil Service Commission anounces an examination to be held at various places February 17 and 18, to fill seven vacancies in the position of medical inspector, $2,000 per annum each, in the Philippine service, and vacancies requiring similar qualifications, as they may occur in that service, at salaries ranging from $1,250 to $1,800 per annum. Applications should be made to the United States Civil Service Commission, Washington, D. C., or to any board of examiners for application form No. 2 and No. 375.

Sanitation of Canal Zone.—During November the sick rate of the Canal Zone was 27.16 per 1000. The death rate for employés was at the annual rate of 11.50 per 1000. The deaths of employés numbered 40, 31 from natural causes and 9 from violence. The death rate of the total population for the month was at the annual rate of 23.71 per 1000, which compares very favorably with 28.86, the rate for November, 1907. There has been no case of yellow fever since May, 1906, nor has there been a case of bubonic plague since August, 1905, although both diseases exist within three days' sail of the ports of Colon and Panama.——During December the sick rate was 25.95 per 1000. The death rate showed a considerable increase over November, 48.6 of the mortality being due to violence. Eliminating deaths from this cause, the death rate from disease shows a great improvement over the same period of last year. There was a diminution of 214 cases of malaria as compared with the preceding month. During the month there were 124 deaths, equivalent to an annual death rate of 20.75 per 1000.

The Antivivisection Controversy.—The Committee on Experimental Medicine of the Medical Society of the State of New York has begun the publication of a series of leaflets setting forth the scientific and medical side of the antivivisection controversy. The publication of these leaflets is in the hands of a committee, consisting of Drs. Frederick S. Lee, Simon Flexner, and James Ewing. Ten leaflets have already been issued, covering various subjects, such as "Animal Experimentation and the Action of Drugs," by Prof. R. A. Hatcher; "Animal Experimentation as Viewed by Laymen," by Charles W. Eliot, President of Harvard University; "The Function of the Thyroid Glands," by Dr. Samuel J. Meltzer, of the Rockefeller Institute for Medical Research; "Animal Experimentation and Diphtheria," by Dr. William H. Park; "Animal Experimentation and Tuberculosis," by Dr. Edward L. Trudeau; "The Sense of Pain in Man and the Lower Animals," by Dr. Frederic S. Lee; "Animal Experimentation and Cancer," by Dr. James Ewing; and "Lord Cromer's Defense of Animal Experimentation" and "Animal Experimentation and Infectious Diseases," by Dr. Simon Flexner. Each of these leaflets is an argument to show the humanitarian aspect of animal experimentation, and the committee is to be congratulated on what it has already accomplished. Copies of these leaflets may be obtained by addressing the Medical

Society of the State of New York, 17 West 43rd St., New York City.

Society Meetings.—The twelfth annual meeting of the Society of College Gymnasium Directors was held in New York City, December 31 and January 1. After reading of papers and reports, the gymnasium of the College of the City of New York was inspected. The name of the society was changed to "The Society of Directors of Physical Education in Colleges." The following officers were elected: President, Dr. R. Tait McKenzie, University of Pennsylvania; vice-president, Dr. George L. Moylan, Columbia University; secretary-treasurer, Dr. Paul C. Phillips, Amherst College; and executive committee, the president, vice-president, secretary, and Drs. James A. Babbitt and James Naismith.——At the annual meeting of the Pi Mu Medical Fraternity, in Richmond, Va., December 19, Dr. W. A. Shepherd, Richmond, was elected senior councilor; Dr. John R. Wright, Louisville, junior councilor; Paul Horole, Richmond, general secretary; Dr. Lawrence T. Price, Richmond, general treasurer, and Dr. Alfred L. Gray, Richmond, historian.——The Northern Tri-State Medical Association of Ohio, Indiana and Michigan, at its annual meeting held in Ann Arbor, January 12, re-elected the following officers: President, Dr. William A. Dickey, Toledo; vice-president, Dr. C. B. de Nancrede, Ann Arbor; secretary, Dr. George W. Spohn, Elkhart, Ind., and treasurer, Dr. Joseph A. Weitz, Montpelier, Ohio.——The Chattahoochee Valley Medical and Surgical Association held its annual meeting in Opelika, Ala., January 12 and 13, and elected the following officers: President, Dr. Aaron L. Harlan, Alexander City, Ala.; vice-presidents, Drs. Homer S. Bruce, Opelika, Ala., and W. L. Cooke, Columbus, Ga.; secretary, Dr. William J. Love, Opelika, and councilor, Dr. James P. Watkins, Opeilka (re-elected). The next semi-annual meeting of the society will be held in Lafayette.

CANADA

Hospital Notes.—The St. Catherines (Ont.) City Council has donated $1,000 for the inauguration of a hospital for consumptives in that city. Capt. R. W. Leonard of the same city has donated $3,000 to the purpose and the Daughters of the Empire have collected another $3,000.——The city is asking the Ontario government to increase the grant for municipal sanatoria from $4,000 to $10,000.——A new hospital is to be opened in Montreal under the name of the Hospital St. Luc. Its work is to be especially among the school children of that city, particular care being paid to cases of eye, ear, nose, throat and mouth.

Typhoid Epidemic in Montreal.—Every hospital in Montreal is taxed to its utmost capacity owing to the outbreak of typhoid in that city, some of the hospitals having to open new wings in order to accommodate the typhoid patients. The incidence of the outbreak occurred immediately after Christmas; probably the Montreal turkey or plum pudding was infected. It is estimated that throughout the city generally there are between 800 and 1,000 cases of the disease. The Medico-Chirurgical Society has taken a hand in the matter and has joined with the French Medical Society and the Engineering Society in bringing the question of Montreal's water supply prominently before the city council and the citizens. During the past five years Montreal has had an exceedingly large death rate from this disease. In 1903 it was 31.45 per 100,000; 1904, 31.89; 1905, 18.11; 1906, 37.08; 1907, 33.26.

Consumption of Alcohol and Tobacco.—During the official year 1907-1908, there was taken for consumption in Canada, 6,849,763 proof gallons of alcohol, there being consumed in the process of manufacture 7,679,000 pounds of malt; 72,997,000 pounds of Indian corn, 14,921,000 pounds of rye, 3,117,000 pounds of wheat, 395,000 pounds of oats, and 17,212,000 pounds of molasses. In the matter of production Ontario is the great whisky province, seven of the twelve distilleries in the domain being located within her boundaries. While the increase in the production of spirits is small compared with that of beer, it is claimed that temperance sentiment is advancing, as is evidenced by the greater increase in the production and consumption of beer. It is shown from 1869 on that there has been a regular decline in Canada in the consumption of spirits, as in the former year the amount consumed per head of the population was 1.124 gallons; now it is 0.889 of a gallon. The consumption of beer has, however, been steadily on the increase, having risen from 2.290 in 1869 to 5.812 gallons per head in the present fiscal year. Last year the cost of tobacco was 1.129 per capita, while in 1896 it was hardly 64 cents. There were 32,088,000 pounds taken for consumption. There were also consumed 200,133,000 cigars and 385,000,000 cigarettes. Cigarette smoking is said to be apparently rapidly becoming the favorite form of using tobacco in Canada.

CUBAN LETTER

(*From Our Occasional Correspondent*)

HAVANA, CUBA, Jan. 16, 1909.

A Department of Public Health for Cuba

Now that the medical profession in the United States has decided that a department of public health in some form is necessary, and is struggling with the various propositions under discussion, uncertain whether it shall take the form of a neoplasm in the interior, or an elephantiasis in the treasury, or a new baby in the cabinet, it is interesting to know that the young Cuban republic, having been safely nursed through its recent attack of eruptive fever, comes out with a fully developed executive department of public health. Among the eight secretaries who will compose the cabinet of the newly elected president, according to a decree recently signed by the provincial governor, is the Secretary of Sanitation and Charities, or *Sanidad y Beneficencia*, to use the official Spanish title.

The new law provides that the department shall consist of the two sub-departments (called *direcciones*) of Sanitation and Charities, at the head of each of which is a director, and of the National Board of Sanitation and Charities. The composition and duties of this board will be mentioned later.

ORIGIN OF THE DEPARTMENT

The beginning of a national sanitary department goes back to the end of the former government of intervention when Gen. Leonard Wood, three days before establishment of the republic, issued a decree providing for a national board of health. This law, which was drawn up by a commission, of which Drs. W. C. Gorgas, J. R. Kean, Diego Tamayo and A. H. Glennan were members, was excellent in theory and gave extensive powers to the national board, but it did not provide the necessary machinery by which these powers could be administered, operating as the board was compelled to do through the local boards of health of the various municipalities over whose personnel and finances the national board had but nominal control. Another defect in this law was the failure to place the quarantine service under the authority of the board. This organization accomplished much excellent work during the presidential term of Estrada Palma, but it was unable to exert any effective influence over the municipalities whose sanitary matters fell into a condition of utter neglect, except in Havana and a few other cities where the national treasury came to the rescue. The next step in advance was the enactment by Governor Magoon of the excellent sanitary law of Aug. 26, 1907, which at one stroke removed all difficulties connected with the question of municipal administration, by abolishing the local boards of health and taking over the sanitary services of all the municipalities in the same way as is done in the case of the postal service in the United States. These municipal services are administered by local sanitary officers appointed and paid by the national government, which also provides the appropriations for all other sanitary expenses. The municipalities, however, are required to pay in part reimbursement to the national treasury one-tenth of their incomes. These local sanitary officials are also given the power to impose fines, the persons fined being, however, allowed the right of appeals to the courts.

QUARANTINE SERVICE

The quarantine service was by another decree made an integral part of the Sanitary Department, constituting as it does the first line of national defense against epidemics. This law has worked successfully for a year and a half, and the cleanliness of the Cuban cities is now a matter of universal remark among the American visitors to the island. It has also given great satisfaction to the Cuban people, who are alive to the desirability of good sanitary conditions for local

as well as international reasons. This law is not repealed or affected by the creation of the new department, except that the administrative powers of the National Sanitary Board will be hereafter divided between the Director of Sanitation and the Secretary of the Department, the duties of the new Board of Sanitation and Charities being principally of an advisory character. These administrative powers are ample, embracing the control of epidemic and contagious diseases, sanitary investigations respecting the cause of diseases, including those of animals which affect man, the enforcement of all sanitary laws and regulations with regard to water supply, sewerage, disposition of refuse, adulteration of food products, beverages and drinks, and those referring to the importation and treatment of food animals. The department is charged with the collection of vital statistics, and has power to require reports from all public institutions, places of public resort and common carriers. It sees to the enforcement of sanitary laws, including the laws governing the admittance of persons to the practice of medicine, veterinary medicine, pharmacy, dentistry, midwifery, embalming, undertaking, and the regulation of prostitution, and laws for the control of offensive and dangerous industries or occupations. It has charge of hospitals for contagious diseases, dispensaries and sanitoriums for tuberculosis and leprosy, and maintains a vaccine establishment and a biologic, chemical and bacteriologic laboratory in Havana.

The official in charge of sanitary affairs in each municipality is called the local sanitary officer. In addition to enforcing all sanitary laws and ordinances, he maintains the following sanitary services: 1. Street cleaning and sprinkling. 2. Removal of garbage and other wastes. 3. Disinfection, public and private. 4. Filling and draining when necessary for the health of the community. 5. Cleaning of cesspools and other collections of filth, in public properties and, when necessary, in private properties, the cost in the latter to be collected from the owner.

It should be remarked that the municipalities in Cuba are not exclusively urban, but include large rural areas also, the island being divided into eighty-two municipal districts, each with its head town. The relation of these to the national government is somewhat similar to that of New England townships to the state.

THE DEPARTMENT OF CHARITIES

The sub-department or Department of Charities is of far older establishment in the Cuban government than that of sanitation, having existed from early times. The law establishing the new department has codified all the existing laws with reference to charities, the basis of such codification being the well-known and excellent law drawn up by Mr. Homer Folks of New York in 1900 at the request of General Wood. The only important changes in this law have been the taking away of administrative authority from the superior board of charities and vesting it in the secretary of the department and director of charities, and in the same way vesting in the superintendents of institutions the administrative powers which were heretofore held by boards of trustees of such institutions. The duties of such boards are now limited to inspectorial and advisory functions. The reason for this change is the same as for the abolition of the local boards of health—the absolute failure of government by administrative boards in Cuba. This is due partly to lack of interest on the part of members of the board, and partly to the impossibility of fixing the responsibility for neglects.

The *Direccion de Beneficencia* administers twenty-five free government hospitals throughout the island, to six of the most important of which are attached nurses' schools. It also administers correctional schools for children of both sexes, to which the law requires to be sent all children under the age of 16 convicted of crimes or misdemeanors by the courts, calling for imprisonment. The terms of commitment are indeterminate and dependent on good behavior. It administers the hospital for the insane at Mazorra, near Havana, which contains over 2,000 patients. It maintains a bureau for placing children in families, which has been of greatest value in caring for orphans of the reconcentration, and is operated in a very satisfactory manner. The director of charities is authorized to call for animal reports from all private charitable institutions and to inspect them annually or at more frequent intervals, to determine whether they fulfill the objects for which they were established. It is declared by the law to be the duty of the department of Sanitation and Charities to extend protection to the insane, imbeciles or other inhabitants of the state who must be supported by public charity or at the expense of private societies or institutions of charity or those of a religious character. The funds devoted to this purpose by the state, by individuals or by charitable institutions are also declared to be under the protection and safeguard of the state, in order to prevent them from waste or misappropriation.

THE BOARD OF SANITATION AND CHARITIES

The national board of sanitation and charities is composed of twelve members, most of them *ex-officio* in character. They are the director of sanitation, director of charities, the chief of the quarantine service, the president of the board of diagnosis of contagious diseases, the president of the commission of special hygiene, the president of the antituberculosis league, the dean of the medical faculty of the University of Havana, the president of the economic association, and four other members selected by the president, among whom must be one lawyer and one engineer. The duties of the board are mainly advisory in character. It makes studies of sanitary projects and laws and renders expert reports thereon for the information of the secretary and advises him of the effects of sanitary legislation; it hears complaints and petitions of a general character referring to sanitary and charitable matters. It is also charged with the investigation of abuses committed in charitable institutions and complaints against the officials thereof, and for the purposes of such investigations, has the power to administer oaths, call witnesses and demand the production of books and papers. Members of this board receive a fee of $15 for each meeting attended by them, provided the total of such fees does not exceed $90 in any one month.

Dr. Nicolás Alberdi has been selected by President-elect Gómez to be the first secretary of the new department, and for the director of sanitation has been chosen Dr. Juan Guiteras, the distinguished yellow-fever expert, whose name is so well known to the medical profession in the United States. The department has a well-trained personnel, and if it can be kept out of the domain of Cuban politics we shall have every reason to expect a continuation of the present highly efficient administration which has made Cuba cease to be a dangerous neighbor.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, Jan. 19, 1909.

Results of the Paris Medical School Riots

The grave troubles that I recorded in my letter of December 24 have had as their first effect the suspension of the competitive examination for "admissibility to the agrégation." But in face of the disturbances aroused by this unlucky *concours*, not only in the medical world, but also in political circles, it is a question whether the suspension will not finally result in its total suppression. [The diploma to be obtained at this competitive examination entitles the holder to compete for the subordinate chairs in the medical faculties.—ED.]

There reigns everywhere at this moment the greatest animosity against the promoter of this *concours*, Professor Bouchard. Arbitrary in character, allowing neither discussion nor contradiction, Bouchard, who for many years has exercised a great influence in the ministry of public instruction, had already rendered himself very unpopular by a series of measures objectionable to the medical profession, such as the establishment of the P. C. N. (preparatory year of physical, chemical and natural science studies), etc. The fact that Bouchard, as president of the board of the competitive examination, appealed for armed protection as a preventive measure, that is to say, before any disorder whatever had justified so grave a proceeding, has everywhere aroused the most lively protests. The municipal council has since voted a reso-

lution expressing regret at the disorderly incidents that had occurred at the medical school, and censuring the precautionary introduction of police in the interior of the Faculty of Medicine. Further, M. Clemenceau, the premier, has ordered the prefect of police not to obey in the future any requisitions of this character made as a preventive measure. A delegation of the syndicate of physicians of the department of the Seine has been received in audience by the president of the republic and incidents were related bearing on this *concours d'admissibilité à l'agrégation;* the reorganization of the medical curriculum was also discussed. M. Fallières gave the delegation a very cordial reception and his support seems to be assured to the legitimate demands of the practitioners.

But it is unfortunately to be feared that the syndicate has gone too far in its protestations and its demands. For instance, in a circular letter addressed to all the physicians of Paris, the syndicate, after recounting the incidents that took place at the opening of the *concours* declares that "these facts demonstrate that the dean of the Faculty of Medicine of Paris has no longer the moral authority necessary to represent the medical profession; the representative of the medical body can be only one of ourselves, elected by all his confrères and having no official ties." It is an entire misconception of the rôle of the dean of the Faculty of Medicine to think that he is called on to represent the medical profession; he represents only the faculty, the organization of which evidently should not depend on the syndicate of physicians.

Opium Dens in Paris

The Ullmo affair has revealed in a startling fashion the disquieting progress that the opium habit has made during recent years in our garrison ports. The minister of the interior has recently issued a decree regulating in France the sale, purchase and use of opium and its extracts. This decree particularly specifies that the importers shall not sell the opium in any quantity except to wholesale merchants, for industrial purposes, or to chemists to transform it into the officinal opium or to extract the alkaloids, and to pharmacists for therapeutic use and under certain conditions. Officinal opium and its extracts are not permitted to be sold by pharmacists except for use in medicine. Outside of these conditions, every delivery of opium or its extracts, even gratuitously, is forbidden under pain of a fine of from 100 to 3,000 francs, and imprisonment for from six days to two months. It is also forbidden, under the same penalties, to connive at the prohibited keeping and use of opium by granting the use of a room or by any other means.

This rigorous repression is only too fully justified by the disquieting proportions that this degrading vice has taken, not only in Toulon and other garrison ports, but even in Paris itself. Investigation a few days ago disclosed the fact that several merchants had installed on their premises secret opium dens, where the habitués could obtain—naturally at elevated prices—everything necessary for the satisfaction of their degrading passion. What measures of defense are to be taken against this scourge are being studied at the present moment by an international conference summoned for the purpose at Shanghai.

The French Red Cross and the Catastrophe at Messina

The three societies for aid to the wounded which form the French Red Cross, have decided to unite in aiding the victims of the earthquake in Sicily and Calabria. A central committee has been constituted, with the Marquis de Vogüé as president, which is composed of delegates from the French Society for Aid to Wounded Soldiers, the Union of the Women of France, and the Association of French Dames. An advance body, consisting of ten trained nurses set out on December 31; a second detachment, charged especially with the care of the wounded during their transportation from Messina to Naples on one of the vessels sent by the minister of marine, departed the next day, carrying 3,000 kilos of material for the wounded—linen and various dressing materials, fracture apparatus, medicines, bedclothes, coverings, woolen clothing, etc.

End of the Yellow Fever Epidemic at Martinique

The governor of Martinique has just informed the minister of the colonies by cablegram that no case of yellow fever has been notified since Dec. 22, 1908. Consequently the governor, by agreement with the health service (*service de santé*), thinks it possible by taking certain precautionary measures to reduce the severity of the measures of evacuation previously instituted.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, Jan. 4, 1909.

Physicians Win from Insurance Companies

The disagreement of physicians and life insurance companies, referred to in my last letter, was happily settled before the end of the old year. By the intervention of a high official, an agreement between the two parties was reached by which the demands of the physicians were granted for the most part. According to this agreement, the medical examiners for the company are to be paid a fee of 6 marks ($1.50) for examination of applicants for insurance up to 2,000 marks ($480), and 12 marks ($3) for examination of applicants for insurance up to 6,000 marks ($1,140), and 15 marks ($2.75) for amounts over this sum, with a fee of 7.50 marks ($1.87) for the certificate of the family physician. As before, there is to be a standing committee formed of representatives of the physicians and of the life insurance companies which shall settle the differences between them. In this way it is to be hoped that this fight, which the German medical profession has carried on with gratifying unanimity, has been ended. But it is very much to be desired, both in the interests of the medical profession and of the public, that a physicians' "strike" shall not occur again. Such a movement on the part of physicians is surely opposed to the ethical aims of their calling. We can not, as a matter of principle, refuse our aid without conflicting with the duties of our profession. It ought to be possible in most cases to settle the points of dispute and reach a satisfactory conclusion of the negotiations in a peaceable way, possibly by the intermediation of some disinterested person of authority as in this case.

Russian Institute for Medical Consultations

There has existed in Berlin for some years a Russian institute conducted by a German physician and a Russian, ostensibly but not actually a doctor of medicine, established for the apparently worthy purpose of serving Russians who come to Berlin by directing them to suitable physicians. Every one who became acquainted with this institution suspected that it was run less in the interests of the Russian patients than for the commercial advantage of the managers and the further developments of the institution have more than abundantly confirmed this suspicion. The commercial methods of the conductors of the institutions were very clever. To establish the reputation of the institute among Russian physicians who send their patients here, the directors secured some of the principal medical authorities to deliver lectures at their institution. The method which they followed was that of the "stool pigeon." First they secured the late von Bergmann, who being of an idealistic nature, did not recognize the commercial basis of the undertaking and supposed that he was rendering a service in establishing closer relations between Russians and Germans. After von Bergmann had indicated his readiness to serve the institute, von Leyden, who notwithstanding better insight into the true inwardness of the matter, had no objections to assist the undertaking, was placed on the list of lecturers, and then all was clear sailing for the institution, for to an enterprise to which such illustrious men had given their assistance no one else need refuse his aid. As equivalent for the lectures the professors received Russian patients, referred by the directors of the institute, and this was indeed a subsidiary, not to be underestimated, result of the scientific addresses. Of course, the directors of the institute received pay for their services from the patients who entrusted themselves to them. But this did not exhaust the profits of these gentlemen; they sent their patients to such consultants as paid more or less for such recommendations.

Copper in Canned Spinach

The Scientific Commission for Medicine in Prussia has reported to the effect that the customary addition of copper to canned spinach, for the preservation of the green color, should not amount to more than 55 mg. pro. kg. (½ grain to the pound). Within this limit no injury to health need be feared. It may be noted that in Austria the same proportion is permitted by the authorities.

Esperanto in Medicine

As a result of the international Esperanto congress, held recently in Dresden, the first German local group of the International Esperanto Medical Association has been founded in Berlin. Its title in its new language is "Tutmonda Esperanta Kuracista Asocio."

The Physicians of Germany in 1908

The medical statistician, Dr. Prinzing, publishes in the *Deutsche medizinische Wochenschrift* some interesting statistics in regard to the medical profession in Germany in the year 1908. The physicians of Germany numbered last year 31,640, and 553 new licenses were granted. A considerable increase is to be expected soon, as in consequence of the lengthening of the medical course a few years ago the number of those who are finishing their studies is temporarily reduced. As formerly, the large cities still attract the larger proportion of physicians. Greater Berlin, i. e., Berlin with its 21 suburbs, has 3,732 physicians, and in the other large cities there were altogether 8,900, making in all 12,632, in contrast with 19,008 in the rest of Germany. For 10,000 inhabitants there were in Greater Berlin 12.3 physicians; in other large cities 9.2; in all the large cities 9.9, in contrast to 3.8 for the rest of Germany. Among the individual large cities, Wiesbaden had proportionally the most physicians, 25.8 per 10,000, followed by Munich with 15.8, Strassburg 14.2, Kiel with 13.1, and finally Greater Berlin with 12.3. Duisburg had the least (3.0). The number of licensed women physicians in Germany amounts to 55, who are all located in the large cities. In Berlin alone there are 17, in Breslau 5, in Frankfurt a. M. 5, in Munich 4, in Hamburg and Dresden each 2. Most of them devote themselves to general practice, but many to gynecology and diseases of children. The development of specialism has made further progress. In the large cities there were in 1908 for 10,000 inhabitants, 3.44 specialists and 6.50 other physicians. Among 100 physicians 34.6 were specialists. The number of specialists has increased about 9 per cent. in the large cities during the last three years, and that of practicing physicians only about 4 per cent. In Greater Berlin the number of specialists has risen to 1,194. Of the single specialties, the number of physicians for mental and nervous diseases shows the greatest increase, next orthopedists and surgeons, then physicians for children's diseases.

VIENNA LETTER

(From Our Regular Correspondent)

VIENNA, Jan. 10, 1909.

Proposed Insurance of Wage-Earners

A very important bill, entitled the Social Insurance Act (*Socialversicherung*), is now under consideration. Its bearing on medicine is great, as it will influence markedly the general health and physical development of the masses. The act unites the hitherto separated branches of insurance, namely, insurance against illness, accidents, old age and invalidism. It raises the maximum income which entitles the earner to free insurance to about $600 a year; the number of persons coming under its operation is 6,500,000. Hitherto the maximum income of persons entitled to free insurance was about $240, and 3,000,000 came under the operations of the law. There is no change in the numbers of those interested in the accident-insurance clause (3,000,000).

The third clause, however, is a new feature on the program of social legislation. Over 10,000,000 wage-earners come under its provisions, and there are no precedents as to its operation in this or other countries. The insurance against illness provides for free medical and therapeutic aid of all kinds. A definite daily allowance, according to earnings, and, if necessary, hospital fees, are to be paid. Hitherto only workers in factories and shops were entitled to such insurance; but hereafter all agricultural laborers and domestics will have a right to it, and by the payment of premiums they may secure the same advantages for their families. The benefit will be obtained as long as the illness lasts; if the duration is more than a year, the patient is pronounced an invalid and receives his pension accordingly. Those who are ill will never be without aid.

Naturally, there will be great numbers of medical men to be appointed. The doctors of the present *Kasse* complain that they are overburdened, although the *Krankenkasse* (the present insurance institution) gives medical aid only for twenty weeks. The bill will materially affect the prospects of the profession, as the enormous amount of medical work to be done will mean a large number of fixed medical appointments. The patient, however, will have his choice of the doctors appointed. The *Krankenkasse* will have to make written appointments with the doctors, subject to the approval of the medical council (*Aerzte-Kammer*) of each district. A special insurance court will settle any disputes between the *Kasse* and its doctors. The increase in the number of those insured will also cause the erection of many small hospitals, as the *Kasse*, which will have to pay the hospital fees of the patients, will probably erect its own hospitals. The *Kasse* already has to pay about 25 per cent. of the hospital fees in this country (about $1,000,000).

The act endeavors to provide for women at childbirth. The pregnant woman will receive daily relief amounting to 150 per cent. of sick pay for one week before and four weeks after giving birth to a child; if she continues ill for a longer period, sick pay will be granted, but the woman must not go to work so long as she receives relief. A minimum period of six weeks has been demanded for convalescence, since this would tend to increase breast-feeding. A "breast-feeding premium" has also been suggested; but it is doubtful whether the government will concede that.

Those entitled to insurance against invalidism will comprise about 30 per cent. of the population. The yearly payment to those invalided will vary from 125 to 560 crowns ($25 to $112); it will depend not only on the number of premiums paid, but on the earning capacity during activity. The term "invalid" is thus defined: Whoever is incapacitated from earning one-third of the sum which healthy persons of his age and abilities can earn at his place of residence, is termed an invalid. Incapacity may result from age, disease, or other causes. Special care will be taken to place patients in sanitariums, homes for convalescents and open-air institutions.

Accidents are to be treated for one year as illnesses, with the right to sick pay; if the effects of the accident last longer, a special accident payment is to be made, according to special schedules. A new valuation of the various organs and members of the body is also given in the act. Special medical experts will be appointed to examine the victims of accident and to direct the treatment. The maximum yearly payment to a person totally disabled by injury will be 1,200 crowns ($240). If the disabled person must be nursed by others, he will receive 50 per cent. more ($360). The *Kasse* will have the right to inspect industrial concerns with a view to lessening the risks of workers. All facts coming to the knowledge of the officers of the *Kasse* are to be treated as professional secrets.

The sum of 288,000,000 crowns ($58,000,000) will be necessary to meet the expense of this almost universal insurance, besides a yearly payment by the state amounting at first to $8,000,000, and increasing up to $20,000,000. The necessary funds are to be obtained, in the case of insurance against illness, by payment of one-third of the premium by the employers, and two-thirds by the employés. The expense of insurance against accident is to be borne by the employer, while the costs of the old age and invalid pensions are to be borne by the insured.

The medical profession will make strenuous efforts to lower the maximum limit of income entitling the earner to free insurance, since private practice, to a large degree, will be cut off by the increase. On the other hand, the act has undoubted advantages, both for the public and for the profession, and it will not be hard to strike a favorable balance.

Pharmacology

THE TURNCOCK MEDICAL COMPANY

It Refers Its Victims to "Any Chicago Newspaper" and One Newspaper Responds

The consideration which has been accorded quacks and nostrum mongers by the daily press—thanks to their extensive advertising patronage—has led to a slight misapprehension in some quarters. Some misguided fakers have at times thought that they owned the press—that all they had to do was to crack the whip and watch the journalistic trick-dog jump through the hoop. In some cases the gentlemen afflicted with this obsession have been severely jarred back into the world of realities.

A recent case of this sort was that of the Turncock Medical Company of Chicago. This concern is one of those which advertise to cure rheumatism and uric acid diseases for $3.00—more or less. A patient who had sought a long-distance diagnosis from these "noted specialists" found that he had been forwarded unasked a bottle of Dr. Turncock's Genuine Discovery, for which he was requested to remit $3.00. This he refused to do and his refusal brought from the company

one of those strictly private, personal and confidential, heart-to-heart circular letters which play so important a part in the quack's armamentarium. The "letter" was signed by Dr. T. Frank Lynott. As to the company's ability, reliability and responsibility, Dr. Lynott referred the victim to "the editor of any Chicago newspaper." Dr. Lynott pointed out, further, that the cost of the "whole treatment of medicine" was "simply the price of a single visit to any reputable physician" and that "I charge nothing extra for my professional services."

The argument, of course, is not a strong one, as the relation between "any *reputable* physician" and Dr. Turnecock's Genuine Discovery as administered by Dr. Lynott is not clear. So, evidently, the patient thought, for he wrote to the editor of one of the Chicago newspapers. Unfortunately for the medical company, it was the *Chicago Tribune* that was consulted and this paper responded to the inquiry with a column writeup of the Turnecock Medical Company. It showed that some other "references" given by the concern in its advertising matter were equally unauthorized. The names of an alderman, of the director of a conservatory of music, and of a druggist, all of Chicago, had also been included in the company's mythical list of "references." Each of these persons repudiated the use of his name in this connection and the opinions of the medical concern as expressed by the victims were the reverse of complimentary. Unfortunately for the individuals concerned, there seems to be no legal process which can be invoked against the company. In the future when Dr. Lynott gives Chicago newspapers as references, he would better add parenthetically—except the *Tribune*. And that will be about as complimentary a thing as any newspaper could wish!

HEALTH GRAINS

A Mixture of Sand, Syrup and Rock Candy as a Therapeutic Agent in Dyspepsia

One of the unique fakes examined in the Association laboratory is a conglomeration, sold under the name of "Health Grains," manufactured by "The Health Grains Co., Westchester, New York City."

The preparation is offered as "A remedy for Dyspepsia, Indigestion, Nervousness, etc." It is sold in round tin boxes, each wrapped in a circular bearing the name of the maker and the place of manufacture. It is guaranteed "that the contents of this package complies with the requirements of the Pure Food and Drugs Act." Inside the box is a small sheet of "directions" giving the following advice:

"Do not chew or grind Health Grains between the teeth, but roll them around slowly until they have become saturated with saliva, then swallow them."

"One scant teaspoonful constitutes a dose. Take one or two doses after a light meal, two or three after a heavy meal. Doses should be taken separately. If your stomach keeps you from sleeping, take from one to three doses.

"Do not overeat. Avoid eating what you knows disagrees with you."

The grains have the appearance of coarse sand covered with a sticky substance. They are odorless and when first taken into the mouth are sweet in taste. When ground between the teeth they exhibit unmistakable signs of hardness. Chemical analysis demonstrated that the nostrum contained 87.50 per cent. of coarse quartz sand and 12.50 per cent. of soluble matter. The soluble matter was found to be rock candy and syrup. The presence of heavy metals, iodids, bromids, alkaloids or acids could not be demonstrated. Health Grains, therefore, appear to be nothing more than ordinary sand mixed with a little rock candy and syrup, showing an originality of composition, surpassed only by the credulity of the consumers of such a nostrum.

SOUR MILK THERAPY

The present interest in what may be called "sour milk therapy" in intestinal putrefaction makes the article by P. G. Heinemann in this issue a timely one. While much of the work done on the subject seems to show that lactic acid or lactic ferments possess value in cases of intestinal putrefaction, the question has in no sense been settled. Still less has it been proved that the *Bacillus bulgaricus* as a lactic acid producing organism possesses the advantages in arresting putrefaction which Metchnikoff originally claimed for it. Because of the unpleasant taste produced by the *B. bulgaricus*, Metchnikoff has urged that the paralactic bacillus (*Streptococcus lacticus*) be used in combination with it. It is therefore, doubtful which of these two organisms is responsible for any resultant benefit.

UNJUSTIFIED CLAIMS

Heinemann's experiments show that the claims made for the various preparations on the market for the artificial souring of milk, are not justified in the light of our present knowledge on the subject. The question is not whether lactic acid, lactic acid bacteria, buttermilk or sour milk has any therapeutic value, but, admitting that it has, whether sour milk prepared with commercial cultures possesses any therapeutic advantages over milk naturally soured. The evidence at hand fails to give the artificially soured product any such pre-eminence.

LACTOBACILLINE

To consider the claims of manufacturers specifically: Lactobacilline made by the Lactobacilline Company is said to be prepared according to Metchnikoff's directions. While Metchnikoff states that yeasts should be absent, as their presence encourages pathogenic bacteria in the digestive tract, Lactobacilline contains a yeast. This, too, in spite of the statement of the manufacturers, "it contains no yeast germs," and is "pure and absolutely free from all microbes except the remedial lactobacillus isolated by Prof. Metchnikoff. . . ."

FERMENLACTYL

Fermenlactyl, which is put on the market by the Anglo-American Pharmacal Company, is very similar in every respect to Lactobacilline. It, too, contains, besides the Bulgarian bacillus, streptococci and yeasts. In the advertising matter microscopic plates are reproduced purporting to show only the "Bulgarian lactic acid bacilli from which Fermenlactyl is prepared." As a matter of fact, there are in addition to the *B. bulgaricus*, other bacilli, yeast cells and cocci. The claim of the manufacturers of both Lactobacilline and Fermenlactyl that the Bulgarian bacillus is the chief agent, is true only when conditions are such that the preparation of sour milk can take place at a temperature considerably higher than that of any ordinary room. This is a somewhat difficult matter when the beverage is prepared in a private house. When the milk stands at room temperature the common *Streptococcus lacticus* becomes the predominating organism. This would be no disadvantage if it had not been claimed that the chief virtue of milk soured by these preparations is the presence of the *B. bulgaricus*. This organism is said to lodge permanently in the digestive tract and to give rise to the formation of lactic acid *in statu nascendi* and thus inhibit the growth of putrefactive bacteria—a statement that lacks scientific proof.

KEFILAC

Kefilac, made by the Kefilac Company, is not a pure culture of lactic acid bacteria and the sour milk prepared with this ferment does not seem to differ materially from ordinary sour milk. Contrary to Metchnikoff's statement that the alcohol contained in the fermented milk of the Bulgarians is of no value, the Kefilac Company states that "through its large portion of water . . . through its carbon dioxid and through its small per cent. of alcohol, Kefilac greatly influences all the vital processes." Like the two preparations previously mentioned, it is a "remedy" for a long list of diseases including cancer of the stomach, rheumatism, etc.

YOGURT

Yogurt is another preparation of this class made by the Good Health Company, of Battle Creek, Mich. It contains a variety of bacteria and at least one species of yeast so that the composition of the fermented product is very similar to that of the others. The term "meat bacteria" is used in the advertising pamphlet, though what is meant is not altogether clear, since non-sporing bacteria are killed if meat is thoroughly cooked. The Yogurt tablets are called an "antitoxic

ferment"—whatever that may be. The bowels must be kept active, otherwise "Colax"—a "patent medicine" put out by these people—must be used. The number of diseases cured by milk prepared with the Yogurt tablets is enormous. An elaborate list of symptoms is given, some of which may easily be imagined by the anxious layman. In fact, the descriptive matter regarding Yogurt reads very much like a Lydia Pinkham advertisement.

LACTONE

It is claimed for Lactone tablets by their makers, Parke, Davis & Company, that the soured milk made with them possesses certain advantages over ordinary buttermilk. The statement: "The cream is left in the milk, rendering it of far greater nutritive value" is only partly true. If directions are followed, the milk is diluted with one-third of its volume of water before inoculation and the fat, therefore, is naturally reduced to 75 per cent. of the original value in the milk. The fact, too, that the casein, milk sugar and salts of the milk are also reduced to 75 per cent. of the original amount is not stated by the manufacturers. The casein is certainly the most valuable part of the milk and while in ordinary buttermilk only the fat-content is reduced, the other constituents being in nearly the normal proportion, yet in Lactone buttermilk there is more fat but less casein. This is of significance since it is now fairly well established that when cow's milk is used the fat is the cause of infantile digestive troubles rather than the casein.

The advertising matter goes on to state:

"In the ordinary method of making butter the milk is allowed to sour from what accidental bacteria may get into it. Usually the lactic acid germs predominate, but along with these there is always a greater or less number of putrefactive bacteria so that the resulting buttermilk is a mixture of true lactic acid, milk, and putrefactive products." It is difficult to understand why putrefactive bacteria should not be present in the milk when Lactone tablets are used but should be present in the same milk when the tablets are not used. If the purest milk obtainable is used, the putrefactive bacteria which are always present in the milk—even of the best grade—will not develop because the normal lactic acid bacteria antagonize them. It is clear that the same dairyman who, by observing cleanliness in his establishment, furnishes a good quality of sweet milk, will observe the same care in handling cream for making butter, and his buttermilk also will be wholesome and clean.

USE OF COMMERCIAL "STARTERS"

More criticism of a similar nature could be made in regard to the use of commercial preparations for fermenting milk. Where clean—certified—milk can be obtained the use of these various preparations seems unnecessary. Inasmuch as it is not always feasible to obtain certified raw milk, however, boiled or pasteurized milk is to be preferred. It is here that the artificial "starter" is of value. After the first inoculation, the same product can be obtained by inoculating pasteurized or boiled milk with a small amount of the first lot inoculated, with proper precautions of cleanliness. Once started, this process may be continued for a long time without having to renew the "starter." Those who have confidence in the merits of the Bulgarian bacillus of Metchnikoff can procure one of the preparations containing this bacillus and then proceed in the same manner as with the butter starter. It is entirely unnecessary, if not misleading, to use fancy names, as fermenlactyl, lactobacilline, kefilac, lactone or yogurt, this last name suggesting the original Bulgarian fermented milk, containing lactic acid, alcohol, decomposition products of butterfat and of casein, besides a number of micro-organisms. A simple name, applicable to all such preparations alike, as for instance, "buttermilk tablets" or "sour milk tablets," seems more rational.

The scope of Heinemann's paper and the thoroughness with which he treats the subject make his article an important addition to the literature of lactic acid therapy. The medical profession—and the public—is under great obligations to him for his willingness to undertake and carry out these important investigations.

Correspondence

Food Adulterations

To the Editor:—I heartily agree with all that Dr. S. Solis Cohen says in his communication to THE JOURNAL, January 9, about food adulterations and rejoice on account of your strong endorsement. Dr. Cohen says:

"I have not the slightest doubt that sodium benzoate (and especially the commercial article of synthetic sodium benzoate) taken in foods more or less continuously, will derange digestion and set up irritation and degenerative changes in the gastroenteric mucosa. Similarly, I have no doubt that copper salts will cause chronic nephritis and it is possible that pathologic changes in the blood and in the nerves may also be originated in this manner."

This is certainly also true of the preservatives which are permitted by the Department of Agriculture and which have long been in use. These are: Salt, vinegar, saltpeter, spices and smoke. The saltpeter is especially harmful, and as for vinegar and spices, they do not belong in a rational dietary. Salt, as we commonly use it, both as a preservative and on our food generally, is, without doubt, harmful. The creasote and the other empyreumatic products of smoke are not wholesome.

Of course, it would be impossible, being so far ahead of popular knowledge, for the authorities to put their taboo on salt, vinegar, spices and smoke; but they should immediately declare against saltpeter. It is far more injurious than sodium benzoate, which may be taken for a considerable period, say twenty days, in 10-grain doses, three times a day, without perceptible ill effects. But take saltpeter in this way and the result will be violent burning pains, vomiting, purging and other evidences of gastroenteritis, which may end in collapse and death. I believe also that spices are even more injurious than is sodium benzoate. They are irritants, they are constipating and, by stimulating the appetite, they cause over-eating.

For these reasons, catsup, Worcestershire sauce, and all like sauces should not be used in our dietary, and it would be consistent with scientific knowledge for the pure food and health authorities to forbid their use. Now that sodium benzoate is forbidden in catsup, this article is preserved by an acetic acid extract of spices. Strong vinegar is percolated over a mixture of cloves, pepper, cinnamon, allspice, etc., and there results a strong antiseptic which is not less injurious, and probably more injurious to health than sodium salicylate or sodium benzoate.

Formerly, in making catsup, the preserved spices were added direct to the tomato pulp, but in this way they do not exert the same preservative effect as in acetic extract. Cloves, too, contain benzoic acid and it must play a part in the preservation of foods treated with acetic extract of cloves. We all know that people ingest too much proteid, and shorten their lives by so doing. The use of spiced catsup, vinegar and meat sauces, have much to do with causing this over-eating of proteid. The objection is in addition to their irritating and constipating effects.

As for pickles and salads, and mustard and vinegar dressing, they are abominations. They are uttterly useless, deleterious and unnecessary. They, too, shorten the duration of life and induce gastric disorders. The facts are, persons who can not eat bland, plain foods with gusto, are abnormal. If catsup, with its acetic acid extract of spices, if Worcestershire sauce and all other like sauces, if pickles and salads and all other gastric stimulants and irritants were left out of our dietary we would be stronger, healthier and happier.

J. N. HURTY, Indianapolis.

Radical Treatment of Hemorrhoids by Excision

To the Editor:—In THE JOURNAL, Dec 12, 1908 (li, 2058), appears an article by Dr. John A Hawkins, under the title given above. This method was described in the first edition of my book, which was published June 1, 1901. I also described

another method, by which the ligatures, instead of encircling the jaws of the clamp, were put through notches and each tied as an interrupted suture before the clamp was removed. This is nearly the same as the second operation described by Dr. Hawkins.

This continuous-suture method was not entirely original with me, as Dr. Earle of Baltimore described nearly the same operation in *Matthews' Medical Quarterly*, in 1896. Dr. Robert Jones of Liverpool used nearly the same method long before Dr. Earle's paper was written, the only difference being that Jones left, above the clamp, an eighth of an inch of the hemorrhoid, through which he placed the continuous suture, instead of putting it around the jaws of the clamp. Many others had done somewhat similar operations, some simply excising the tumor, sewing the parts together, and including the bleeding vessels in the grasp of the ligature; others ligated the stump and sewed the mucous membrane over it. All these procedures led along the same line, and therefore it did not seem best to me to credit any one of them to one person.

R. D. MASON, M.D., Omaha.

The Evil of Prescribing a Larger Quantity of Medicine Than Is Necessary

To the Editor:—E. M., a woman aged 26, was seized with an attack of diarrhea, for the alleviation of which she took medicine that had been prescribed for a similar contingency two years previously. The diarrhea continuing, she took on December 26 two teaspoonfuls of the medicine, of which there was a small quantity remaining, and two more teaspoonfuls December 27. During the afternoon of December 27 her vision began to be blurred, she grew nervous, her mouth became dry and her heart action rapid. Soon after, her hands and feet grew chilly and numb. By this time she was alarmed and summoned medical aid. I found her pacing the floor and nervously loquacious. The dryness of her mouth and the history, together with the dilated pupils and the uncontrolled heart action, confirmed the diagnosis of atropin poisoning. Treatment along accepted lines was satisfactory in its result.

Often we prescribe medicine in quantities that far exceed the duration of the illness, and, consequently, the patient, loth to throw away good medicine, places that which remains aside for future use. A similar occasion for the use of this medicine arising in the family, the old bottle is uncorked and its contents administered. To all purposes this medicine then becomes a self-prescribed proprietary mixture, purchased, however, with the sanction of the doctor, rather than on the recommendation of the druggist. The harm that might result from such self-drugging with these left-over drugs is worthy of our attention.

CLARENCE D. SELBY, M.D., Toledo, Ohio.

Cannabin Tannate

To the Editor:—We desire to submit our comments on the article on cannabin tannate, which appeared in the columns of THE JOURNAL, Nov. 21, 1908.

Cannabin tannate was first manufactured by E. Merck almost thirty years ago at the request of university professors. It is mentioned in the *Ergänzungsbuch zum Arzneibuch des deutschen Reichs* (1906) and the British Pharmaceutical Codex (1907). There is, therefore, a demand for it, which it is our business to satisfy. Whence such demand emanates, whether from scientific investigators or from practicing physicians, we have no means of ascertaining. Both classes look to us to supply their needs through regular trade channels.

MERCK & Co., New York.

Harm from Substitution of Silver Nucleinate for Argyrol in Gonorrhea

To the Editor:—THE JOURNAL, Dec. 12, 1908, p. 2081, published an abstract of a paper I read before the Southern Medical Association, in which I recommended that argyrol be retained in the urethra by adhesive plaster, to cure quickly cases of beginning gonorrhea. Since writing this paper this plan of treatment was given to a patient in whom so much urethral irritation was produced that the treatment had to be discontinued. Investigation as to the cause of this irritation disclosed the fact that the druggist had substituted silver nucleinate for argyrol, in my prescription; it was found, furthermore, that many druggists had been making this or similar substitutions for some time.

The prolonged action of medication sealed in the urethral canal as I have suggested makes it absolutely necessary that the medicine be non-irritating. The success of this plan of treatment being dependent on this fact leads me to call attention to the harm that may result from this substitution.

E. G. BALLENGER, M.D., Atlanta, Ga.

"The Climatic Fallacy" in the Treatment of Tuberculosis

To the Editor:—A curious error appears in your Current Medical Literature columns January 9, page 167. The note on my article in the *Illinois Medical Journal* of November on the "Climatic Fallacy" refers to an abstract in a preceding issue of THE JOURNAL. On turning to that issue, I find that the abstract there given is not that of my article, but of Dr. Pettit's paper, to which mine was a reply, as I hold views entirely different from those of Dr. Pettit. In that article, I have endeavored to show that Dr. Pettit is not justified in stigmatizing as a "fallacy" the assertion of the value of climate in tuberculosis. Permit me to quote the following words from my article:

"I am a firm believer in climate. Coming west in a far advanced stage of the disease, and with a laryngeal complication which cost me my voice for eight months, and in two years' time making an apparent cure, I feel that I am justified in my climatic faith."

I then proceed to controvert seriatim those statements of Dr. Pettit to which I find it impossible to assent.

L. S. PETERS, Silver City, N. M.

Esperanto as an International Language: A Correction

To the Editor:—In my letter in THE JOURNAL, January 16, I find I was in error in stating that Professor Jespersen had retired from the Committee of the Delegation. May I take this opportunity of asking the avalanche of correspondents who have written to me, asking how best to commence the study of the language, to give me a little time in which to reply to their letters. Also I should be glad if any future correspondents would kindly enclose a stamped directed envelope, as the tax of postage is already considerable.

KENNETH W. MILLICAN.

1143 Sheridan Road, Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

LEYDEN'S DISEASE—PERIODICAL VOMITING

To the Editor:—Please give diagnosis, prognosis and treatment of Leyden's disease (periodical vomiting).

A. S. HAWKINS, M.D., Monett, Mo.

ANSWER.—The form of periodical vomiting described by von Leyden is characterized by sudden attacks of nausea, gastric pain and excessive vomiting first of food, and later of mucus and bile, coming on at regular intervals of weeks or months, and persisting for from a few hours to several days. Associated with the vomiting, there are frequently pains in the extremities, headache and, if the attacks are frequent or prolonged, there may be extreme prostration and emaciation. In the intervals between attacks, the subjects of this condition complain of no symptoms referable to the stomach or associated organs, and present no signs of lesion of the central nervous system. Examination of the gastric contents during and in the intervals between the attacks usually shows no characteristic abnormality.

In the diagnosis of this disease, lesions of the central nervous system such as encephalitis, meningitis, brain tumor, the intoxications resulting from opium, tobacco, etc., and the many causes of reflex vomiting such as inflammations of the abdominal viscera, the kidney, eye and ear of course must be first excluded. The

attacks show a remarkable similarity to the gastric crises of tabes in which gastric disturbances may antedate by months or even years any other symptom. The regularity both of the intervals between the attacks and of their duration is said to distinguish von Leyden's disease from gastric crises, but in some cases at least it would appear that the possibility of tabes can not be thus excluded.

Migraine also presents certain features, *e.g.*, periodicity, headache, vomiting and sometimes gastralgia, which resemble periodical vomiting, and it may well be that some of the cases regarded as von Leyden's disease are really forms of sick headache. The vomiting seen in hysterical individuals must also be considered, but here other hysterical stigmata will usually assist in the diagnosis. The periodical or cyclical vomiting of children is apparently a condition distinct from that under consideration, dependent in most cases on an autointoxication with perhaps fever and signs of acidosis.

The treatment of the condition is largely symptomatic. The mode of life of the patient should be regulated, so as to remove causes of nervous disturbance. The diet should be simple, nutritious and non-irritating. Any apparent predisposing factors, if present, should be removed. Sedatives, such as the bromids, may be of value. During the attacks, iced drinks—albumin water, champagne, etc.—may be given in small amounts. If the vomiting is persistent it may be well to abstain from all alimentation by mouth, and to maintain the fluids of the body by saline enemata. Nutritive enemata may also be given. Gastric lavage will be found of great value. Sinapisms applied to the epigastrium sometimes help to allay the vomiting. In severe cases it may be found necessary to give morphin hypodermically, though this drug should be used only as a last resort, particularly in neurotic individuals.

THE SPECIALIST AND EMERGENCY CALLS

To the Editor:—Is a physician doing special work morally obligated to answer an emergency call? A. S.

ANSWER.—This depends on the nature of the case and the immediate proximity of other available physicians. In one's own specialty one is no less morally bound than a general practitioner to respond to an emergency call. The greater the power to render skilled first aid in emergency to the victims of disaster, the greater the moral obligation to do so. Outside of one's own specialty, however, the moral obligation would seem to decrease in direct proportion to the accessibility of other physicians, practicing either in the specialty involved in the case, or in unrestricted practice. In the absence, however, of any other accessible practitioner—as, for instance, in very isolated places—a gynecologist might properly be called on to do his best to save an injured eye, or an ophthalmic surgeon to lend his aid in a complicated labor case. A physician should ever remember that he is a physician first and essentially, a specialist only secondarily.

KOENIG'S NERVE TONIC

To the Editor:—Can you give me any information regarding the composition of "Koenig's Nerve Tonic," a widely advertised "patent medicine?" H. F. C., Baltimore.

ANSWER.—This nostrum, which is recommended for hysteria, chorea, epilepsy, hypochondria, alcoholism, drug habits, etc., is put on the market by the Koenig Medicine Company, a "patent-medicine" concern of Chicago. It is advertised in the method common to such nostrums and the claims made are characteristically exaggerated. According to one analysis Koenig's Nerve Tonic contains 15 per cent. potassium bromid and a small amount of the bromids of sodium and ammonium, together with a little valerian. The danger of indiscriminate dosing with bromids is well known, but unfortunately the Food and Drugs Act does not require that preparations containing these drugs shall have the contents stated on the label.

The Public Service

Army Changes

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Jan. 23, 1909:

Webber, H. A., major, ordered to Hot Springs, Ark., for observation and treatment.

Hopwood, L. L., and McIntyre, H. B., 1st lieuts., arrived at San Francisco, from Philippine service, and ordered to duty at the General Hospital, San Francisco.

Freeman, C. E., 1st lieut., arrived at San Francisco, from Philippine service, and ordered to duty at Fort Miley, Cal.

Davis, W. B., lieut.-col., ordered to duty in the Philippine Division, sailing from San Francisco, Cal., Feb. 5.

Gibner, H. C., capt., granted leave of absence for 10 days.

Ewing, C. B., major, granted leave of absence for one month.

Bratton, T. S., major, and Morse, A. W., and Craig, C. F., capts., detailed on general court martial to meet at Fort Robinson, Neb., Jan. 15.

Rich, E. W., capt., granted leave of absence for four months, with permission to visit the United States.

Persons, E. E., capt., ordered to report for examination for promotion at San Francisco, Cal., and on completion, to proceed to Fort Jay, N. Y., for duty.

Manly, C. J., major, ordered to Fort Bliss, Texas, for duty, on return from Cuba.

Brooks, W. H., capt., ordered to Fort Mackenzie, Wyo., for duty, on return from Cuba.

Whitcomb, C. C., capt., ordered to Fort Wingate, N. M., for duty, on return from Cuba.

Baker, David, major, ordered to report for duty at Fort McPherson, Ga.

Van Dusen, J. W., capt., designated as acting chief surgeon, Department of the Missouri, in addition to present duty at Fort Crook, Neb.

Casaday, G. H., dent.-surg., relieved from duty at the Army General Hospital, San Francisco, Cal., and ordered to Fort Shafter, Hawaii Territory, for duty.

Ryan, E. P. R., dent.-surgeon, ordered from Muskogee, Okla., to Fort Leavenworth, Kans., for duty.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending Jan. 23, 1909:

Murphy, J. A., surgeon, ordered to duty at the Naval Hospital, Annapolis, Md.

Snyder, J. J., surgeon, detached from the Marine Recruiting Station, Philadelphia, and ordered to the Naval Station, Port Royal, S. C.

Fauntleroy, A. M., P. A. surgeon, detached from the Naval Academy and ordered to the Marine Recruiting Station, Philadelphia, and to additional duty in attendance on officers not otherwise provided with medical aid.

Mayers, G. M., P. A. surgeon, transferred to the retired list, from Jan. 16, 1909, in accordance with the provisions of section 1453, Revised Statutes.

Campbell, R. A., acting asst.-surgeon, appointment as acting assistant-surgeon, dated Jan. 9, 1909, revoked.

Public Health and Marine-Hospital Service

List of changes of stations and duties of commissioned and other officers of the Public Health and Marine-Hospital Service for the seven days ended Jan. 20, 1909:

Banks, Charles E., surgeon, directed to proceed to St. Johns River Quarantine Station for special temporary duty.

Brooks, S. D., surgeon, granted 22 days' leave of absence from Jan. 10, 1909, on account of sickness.

Wertenbaker, C. P., surgeon, directed to proceed to Savannah and South Atlantic Quarantine Stations, Ga., on special temporary duty.

Anderson, John F., P. A. surgeon, detailed to represent the service at the annual meeting of the Legislative Council of the American Medical Association to be held at Washington, D. C., Jan. 18, 1909.

Anderson, John F., P. A. surgeon, granted 2 days' leave of absence from Jan. 14, 1909, on account of sickness.

Fricks, L. D., P. A. surgeon, granted 7 days' leave of absence from Jan. 9, 1909, under paragraph 210, Service Regulations.

Amesse, J. W., P. A. surgeon, directed to proceed to Nuevitas, Cuba, on special temporary duty, Jan. 13, 1909.

Hurley, J. R., asst.-surgeon, relieved from duty on Revenue Cutter *Bear* and directed to report to the medical officer in command San Francisco Quarantine, Angel Island, Cal., for duty and assignment to quarters.

Hurley, J. R., asst. surgeon, granted 2 days' leave of absence, Dec. 25, 1908, and Jan. 1, 1909.

BOARD CONVENED

Board of medical officers convened to meet at the office of the Marine-Hospital in Norfolk, Va., Jan. 18, 1909, for the purpose of conducting a physical examination of an officer of the U. S. Revenue Cutter Service. Detail for the board: Surgeon C. P. Wertenbaker, chairman; Acting Assistant Surgeon R. W. Browne, recorder; Jan. 15, 1909.

CASUALTY

Smith, Alexander C., surgeon, died in Pittsburg, Pa., Jan. 15, 1909.

Health Reports

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended Jan. 22, 1909:

SMALLPOX—UNITED STATES

California: Los Angeles, Dec. 26-Jan. 2, 2 cases; San Francisco, 3 cases.
Illinois: Lafayette, Jan. 4-11, 7 cases.
Kansas: Topeka, Dec. 26-Jan. 2, 5 cases.
Kentucky: Covington, Jan. 2-9, 1 case.
Maine: Van Buren, Jan. 2-9, 4 cases.
Massachusetts: Taunton, Jan. 2-9, 1 case.
Minnesota: St. Paul, Nov. 1-30, 38 cases.
Missouri: St. Joseph, Dec. 12-19, 1 case; St. Louis, Jan. 2-9, 1 case; Springfield, Dec. 1-31, 1 case.
North Carolina: In five counties, Nov. 1-30, 23 cases.
Ohio: Cincinnati, Jan. 1-8, 13 cases; Tiffin, Jan. 2-9, 1 case.
Tennessee: Knoxville, Jan. 2-9, 2 cases.
Texas: San Augustine County, Jan. 9, present.
Washington: Spokane, Dec. 26-Jan. 2, 1 case, 1 death.
Wisconsin: LaCrosse, Jan. 2-9, 6 cases; Milwaukee, Dec. 26-Jan. 9, 15 cases.

SMALLPOX—FOREIGN

Arabia: Aden, Dec. 7-21, 17 deaths.
Brazil: Rio de Janeiro, Nov. 28-Dec. 13, 298 cases, 169 deaths; Santos, Nov. 22-Dec. 6, 4 deaths.

Canada: Halifax, Dec. 26-Jan. 2, 3 cases; Montreal, 1 case; Winnipeg, 2 cases.
Chile: Talcahuano, vicinity of, Nov. 20, present.
China: Shanghai, Nov. 21-28, present.
Ceylon: Colombo, Nov. 7-22, 37 cases, 9 deaths.
Egypt: Alexandria, Nov. 27-Dec. 2, 1 death; Cairo, Dec. 9-16, 9 cases, 6 deaths.
Great Britain: Bristol, Dec. 12-19, 1 case.
Guatemala: Guatemala City, to Dec. 21, 600 cases, 200 deaths.
India: Bombay, Dec. 8-15, 5 deaths; Calcutta, Nov. 25-Dec. 5, 14 deaths; Rangoon, Nov. 28-Dec. 5, 1 death.
Indo China: Saigon, Nov. 21-28, 1 case.
Italy: General, Dec. 20-27, 38 cases, 10 deaths; Genoa, Dec. 8-15, 1 case; Naples, Dec. 20-27, 24 cases, 10 deaths.
Java: Batavia, Nov. 1-Dec. 5, 7 cases, 1 death.
Mexico: Mexico City, Nov. 7-Dec. 5, 22 deaths.
Persia: Tabriz, Oct. 9-Dec. 9, present.
Peru: Lima, Dec. 10, 4 cases.
Porto Rico: Mayaguez, Dec. 19-26, 1 case.
Portugal: Lisbon, Dec. 12-Jan. 2, 7 cases.
Russia: Moscow, Dec. 5-19, 38 cases, 16 deaths; Riga, Dec. 12-19, 1 case; St. Petersburg, Dec. 5-12, 7 cases, 2 deaths.
Servia: Belgrade, Dec. 5-12, 2 deaths.
Turkey: Constantinople, Dec. 13-20, 6 deaths.

YELLOW FEVER

Brazil: Para, Dec. 12-26, 5 cases, 5 deaths.
Dutch Guiana: Paramaribo, Dec. 1-31, 18 cases, 4 deaths.
Ecuador: Guayaquil, Nov. 28-Dec. 12, 4 deaths.
Mexico: Mexcanu, vicinity of, Dec. 26-Jan. 2, 1 case, 1 death; Merida, 2 cases; Sodzil, plantation, 1 case; Vera Cruz, 2 cases, 1 death.

CHOLERA—INSULAR

Philippine Islands: Manila, Nov. 28-Dec. 5, 7 cases, 5 deaths; Provinces, 360 cases, 227 deaths.

CHOLERA—FOREIGN

India: Bombay, Dec. 8-15, 16 deaths; Calcutta, Nov. 28-Dec. 5, 9 deaths; Madras, Dec. 5-11, 5 deaths; Rangoon, March 28-Dec. 5, 1 case.
Persia: Tabriz, Dec. 9, present.
Russia; General, Nov. 28-Dec. 19, 778 cases, 352 deaths.
Siam: Bangkok, Nov. 1-30, present.

PLAGUE

Brazil: Rio de Janeiro, Nov. 28-Dec. 13, 13 cases, 6 deaths.
Ecuador: Guayaquil, Nov. 28-Dec. 12, 3 deaths; Mialgro, Dec. 16-20, 6 cases, 2 deaths.
Egypt: General, Dec. 18-30, 31 cases, 4 deaths.
India: General, Nov. 28-Dec. 5, 2,196 cases, 1,626 deaths; Bombay, Dec. 8-15, 8 deaths; Calcutta, Nov. 28-Dec. 5, 6 deaths; Rangoon, Nov. 28-Dec. 5, 3 deaths.
Indo-China: Saigon, Nov. 21-28, 1 case, 1 death.
Peru: General, Nov. 20-Dec. 3, 55 cases, 25 deaths; Lima, 7 cases.
Turkey: Bagdad, Nov. 28-Dec. 12, 6 cases, 1 death.
Siam: Bangkok, Nov. 1-30, present.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, POSTGRADUATE WORK, CONTRACT PRACTICE, INSURANCE FEES, LEGISLATION, ETC.

MEDICAL LAWS IN STATE LEGISLATURES

The legislatures in most states meet biennially, the majority during the first week in January of the odd year. Legislatures are now in session in the following states: Arizona, Arkansas, California, Colorado, Illinois, Indiana, Kansas, Maine, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Mexico, New York, Nevada, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Washington, West Virginia, Wisconsin and Wyoming. In addition, the Florida legislature will meet in April and the Georgia legislature in June. In many of these states, the increasing interest in public health and its protection and regulation by the state is marked; in some states the members of the legislature are showing more interest than in any previous year. We hope to keep our readers informed regarding bills introduced in the various state legislatures on matters affecting public health. Some of the more important bills will be abstracted. So far, the following measures have been reported to us:

INDIANA

Three bills of interest to the medical profession have been introduced. (1) A bill for the prevention of the pollution of streams; (2) a bill providing for the sanitary features of school houses hereafter built in Indiana as well as for medical inspection of schools; (3) a housing bill. These bills have been carefully prepared in the light of experience gained by the state board of health for a number of years past and have been cordially received by the legislature.

KANSAS

House Bill 1 is a vital statistics bill introduced by Mr. Allen of Wyandotte County. Another bill which will be introduced shortly provides for the appropriation of $10,000 for the use of the state board of health in inaugurating a campaign throughout the state against tuberculosis, the essential feature of which will be the assemblage of an exhibit under the care and direction of a competent lecturer. These two bills are in the interest of the public health.

SOUTH DAKOTA

House Bill 2 is an act to prevent the manufacture and sale of adulterated or misbranded drugs. The U. S. Pharmacopeia and National Formulary are recognized as standards both as to nomenclature, strength, quality and purity, with the provision that a "plain statement on the package of the standard of strength," etc., will exempt the manufacturer from complying with the Pharmacopeia or National Formulary. The state board of pharmacy is authorized to enforce the act. The rules and regulations contained in the national Food and Drugs Act are to be applied so far as possible.

House Bill 12 creates a state hospital and farm for inebriates to which persons addicted to the use of alcoholic liquors, morphin, cocain or other narcotic drugs can be committed either on their own application or on that of their friends. Furnishing any person so committed with any narcotics or intoxicating liquors is made a felony. The regulation and management of the hospital is put in the hands of the state board of charities and correction.

House bill 36 is also a bill for the regulation of drugs which differs from House Bill 2 in the following particulars: The definition of adulteration in House Bill 2 includes any deviation from the standard of the U. S. Pharmacopeia or National Formulary, and also specifies that a preparation is adulterated if it falls below the professed standard or quality under which it is sold. House Bill 36 makes no mention of any standard but defines adulteration as consisting of, (1) the addition of any substance which will reduce, lower or injuriously affect the quality, strength or purity of the preparation; (2) if the strength, quality or purity of the preparation fall below the professed standard under which it is sold; (3) if the contents of the package should be removed in whole or in part and other substances placed inside of the package; (4) if the preparation be an imitation of or is offered for sale under the name of another article. The provisions regarding misbranding are more explicit in House Bill 36 than in House Bill 2. The principal difference, however, is that House Bill 2 places enforcement in the hands of the state board of pharmacy, while House Bill 36 places it in the hands of the dairy and food commissioners. House Bill 36 also creates a referee board consisting of the president of the state board of health, the president of the state board of pharmacy and the state chemist.

House Bill 74 is similar to House Bill 12, providing for the examination of persons addicted to the excessive use of liquors, morphin, cocain and other drugs. House Bill 116 establishes a sanitarium for tuberculosis at Custer, S. D., and places the management in the hands of the state board of charities.

TEXAS

No copies of bills from Texas have been received, but a newspaper clipping states that a bill establishing a state board of health and one establishing a tuberculosis sanitarium will be introduced. The state board of health bill is a combination of the bill drawn by the state health department and that drawn by the State Medical Association of Texas, and provides for seven members of the state board of health with the state health officer as the executive officer of the board. The bill for a tuberculosis sanitarium calls for an appropriation of $150,000 or more for the establishment of a tuberculosis sanitarium in southwest Texas, the institution to be under state control.

Vermont Adopts an Optometry Law

The Vermont legislature has passed an optometry bill, which we regret to say, has been signed by the governor, and has become a law, as we announced editorially in THE JOURNAL, January 23, page 303.

In Section 1 optometry is defined as "the employment of any means, other than the use of drugs, for the treatment of the powers of vision and the adaptation of lenses for the aid thereof." A state board of examiners is established of three persons engaged exclusively in the practice of optometry, who have been residents of the state and actively engaged in the practice of optometry for at least five years. The usual provisions for the organization and perpetuation of the board follow. Persons desiring to practice "optometry" must be over 21 years of age, with a preliminary education equivalent to at least two years in a high school and must be graduates of a "recognized standard school of optometry maintaining a two years' course of study of at least six months of each year." Persons who have been continuously engaged in the practice of optometry for more than two years prior to the passage of the act are exempt from examination. Duly licensed physicians are exempt, also persons who "neither practice nor profess to practice optometry, but who sell spectacles, eye glasses or lenses on prescriptions from physicians or registered optometrists or as merchandise from permanently located places of business."

Vermont is the eleventh state to adopt a law recognizing and licensing "optometry." The law, as indicated above, attempts to distinguish between "optometrists" and those who simply sell spectacles, eyeglasses or lenses. The law also specifically distinguishes between physicians and optometrists. As the definition of optometry given in the first section includes the treatment of the powers of vision and the adaptation of lenses for the aid thereof, it would be difficult to see how any limitation could be put on the work of the optometrist, as he has authority to measure the power of vision in any case, whether the cause of the limitation of the powers of vision be an ordinary, normal presbyopia, a glaucoma or an atrophy of the optic nerve. He is also authorized to use any means whatever except drugs. The question whether a cataract operation, for instance, followed by the use of glasses, would not be authorized by this law, is one which the courts will have to determine. In a word, there has been established in Vermont, as in some other states, a distinct class, midway between the spectacle fitter and the legally qualified physician, which is now authorized by the state to treat practically all diseases of the eye so long as its members do not use drugs. They are required to have a preliminary education equivalent to two years of high school work and to be graduates of a recognized standard school of optometry maintaining a two year course of six months each, while the legally qualified physician, who may limit his practice to diseases of the eye, is required to pass an examination which requires a four year course of eight months each. In other words, the law just adopted admits optometrists to the same privileges as legally qualified physicians who are oculists, yet only requires of them one-half of the qualifications exacted of physicians. It would be most interesting to secure a decision from the supreme court of the state as to whether such a law is not class legislation and therefore unconstitutional.

Dr. McCormack in Minnesota

Dr. J. N. McCormack devoted the second week in January to filling appointments in Minnesota, speaking in St. Paul Tuesday evening under the auspices of the St. Paul Institute of Arts and Sciences, and on Wednesday and Thursday evenings in Minneapolis, the Wednesday evening address being for the public and the one Thursday evening for physicians. On Friday, January 15, he attended the Southwestern Minnesota Medical Society at Pipestone, in connection with which Dr. McCormack spoke in the afternoon to the members of the society and in the evening addressed a public audience at the City Hall. In addition, Dr. McCormack addressed the Minnesota State legislature on the subject of sanitary legislation and the conservation of the public health.

Reports from members of the local profession are unanimous in stating that his visit has been productive of great good to the people of the state. Dr. H. M. Bracken, executive officer of the State Board of Health, writes: "His visit will be a great help both in dealing with civic matters and with legislative problems. As to public health work, Dr. McCormack's visit has been of great assistance. I only wish he might have been in the state in the early fall when we could have secured more attention from the present legislators."

Dr. F. F. Wesbrook of Minneapolis, writes: "We have most thoroughly enjoyed Dr. McCormack's visit and our only regret was that he could not stay longer."

Dr. Arthur Sweeney says: "It was a great pleasure to have Dr. McCormack with us and he has produced an immense amount of benefit. The Ramsey County Medical Society gave him a warm welcome and he stimulated it to a new sense of its responsibilities. His public meeting was a splendid affair, the hall being packed to the doors and not a soul left until he had said his last word. I have heard many comments of the most favorable nature from those who heard him. His greatest work was done in the legislature. He talked to the senate and the house, the governor being present, for over an hour. The array of practical medical statistics he gave them was most conclusive, and they are prepared to go the limit on milk inspection, school inspection, and the regulation of quackery. I am more encouraged now than ever before over the prospects in our state, and I believe that for years to come we will reap the benefit of Dr. McCormack's visit. He is a true missionary, and is doing, in my opinion, the most valuable work that is being done by the Association. I write this from the fulness of my realization of our needs."

Germania Life Insurance Company Restores Five Dollar Rate

The Germania Life Insurance Company of New York has issued a circular to its examiners announcing that on and after Jan. 1, 1909, the company will pay five dollars for each complete examination and report, with two dollars additional for a microscopic examination of the urine.

POSTGRADUATE COURSE FOR COUNTY SOCIETIES

DR. JOHN H. BLACKBURN, DIRECTOR
BOWLING GREEN, KENTUCKY

[The Director will be glad to furnish further information and literature to any county society desiring to take up the course.]

Sixth Month—Fourth Weekly Meeting

Surgery of the Intestines (Continued)

RUPTURE OF THE INTESTINES

Location and character of lesion. Difficulty in diagnosis. Necessity for early operation. Operation in rupture of small intestine, of colon.

EMBOLISM AND THROMBOSIS OF MESENTERIC VESSELS

Pathology of embolism, of thrombosis. Symptoms and diagnosis. Indications for operative treatment. Technic.

APPENDICITIS

CLASSIFICATION.—A. Non-suppurative Appendicitis: 1. Endoappendicitis (catarrhal). 2. Interstitial appendicitis, (a) hyperplastic, (b) obliterative. B. Suppurative Appendicitis: 1, Intratubular; 2, intramural; 3, peri-appendicular. C. Perforative Appendicitis. D. Gangrenous Appendicitis.

DIAGNOSIS AND INDICATIONS for operation in each type.

CONTRAINDICATIONS to operation.

INTERVAL OPERATION.—Position of appendix. Incision, McBurney, Harrington, Battle, Kammerer. Search for appendix. Treatment of stump of appendix.

ABSCESS IN DISEASE OF APPENDIX.—Influence of position of appendix on site of abscess. Incision, search for appendix, drainage.

GUNSHOT WOUNDS OF INTESTINES

Patho'ogy and complications. Diagnosis. Indications and contraindications to operative treatment. Technic; intestinal suture, enterectomy, drainage.

Monthly Meeting

Preparation of the Patient for an Abdominal Operation.
Diagnosis and Treatment of Acute Intestinal Obstruction.
Details of the Operative Treatment of Gunshot Wounds of the Stomach and Intestines.

Marriages

HERBERT L. THOMPSON, M.D., to Miss Nymah McLenehan of Chicago, January 20.

LOUIS L. HIRSCH, M.D., Providence, R. I., to Miss Esther Harris of Chicago, January 19.

ARNER E. GORE, M.D., Marshall, Mo., to Miss Adele Fleming of Columbia, Mo., December 30.

E. LEE GOWDY, M.D., Campbellsville, Ky., to Miss Flora Finucan of Lebanon, Ky., January 12.

GUY JOHNSON, M.D., Traverse City, Mich., to Miss Madge Lesure of Menominee, Wis., recently.

ALBERT CHARLES PURCELL, M.D., Streator, Ill., to Miss Mayme Wolfe of Eagle, Ill., January 5.

BENJAMIN C. SHULER, M.D., Shenandoah, Va., to Miss Frances Gore, at Stanley, Va., January 12.

CHARLES SAMUEL BRYAN, M.D., to Miss Helen Marie Fendrich, both of Vincennes, Ind., January 14.

HARRIE SANBORN GARLAND, M.D., Sapulpa, Okla, to Miss Rose Edith Kinsman of Kansas City, January 14.

Deaths

Henry Reed Stiles, M.D. New York University, New York City, 1855; one of the founders of the Long Island Historical Society; a health inspector of New York City for three years; later medical superintendent of the State Homeopathic Hospital for the Insane, Middletown; professor of nervous and mental diseases in the New York Woman's Medical College from 1882 to 1885; for a time editor of the *Toledo Blade;* a historian and genealogist; died at his home in Hillview, N. Y., January 8, from cerebral hemorrhage, aged 76.

James **Fenton Bryant, M.D.** New York University, New York City, 1867; a member of the Medical Society of Virginia, Seaboard and Southside Virginia medical societies, and associations of surgeons of the Southern Railway and Seaboard Air Line; a Confederate veteran; a member of the board of visitors of the Medical College of Virginia, Richmond; formerly superintendent of schools of Southampton County; died at his home at Franklin, Va., January 16, aged 67.

Alexander Conde Smith, M.D. Northwestern University Medical School, Chicago, 1887; a member of the American Medical Association; who entered the Public Health and Marine-Hospital Service in 1889; was made passed assistant surgeon in 1893, and promoted to surgeon in 1904; died in Mercy Hospital, Pittsburg, January 15, aged 48, as the result of injuries received six days before by being thrown from a horse.

Louis C. Bruning, M.D. University of Louisville, 1895; of Miles City, Mont.; a member of the American Medical Association and the Tri-County Medical Association of Eastern Montana; assistant surgeon of volunteers with Philippine service in 1898 and 1899; captain and assistant surgeon First Infantry, Montana Volunteer Militia; a member of the State Board of Health; died in Chicago, January 12, aged 41.

Charles Carroll Shinnick, M.D. Hahnemann Medical College, Chicago, 1878; of Oakland, Cal.; formerly a member of the board of health of Oakland; surgeon to the South Dakota State Soldiers' Home, and member and twice secretary of the State Board of Medical Examiners of Utah; a veteran of the Civil War; died in Santa Cruz, Cal., January 12, from chronic nephritis, aged 60.

Roscoe Ellsworth Brown, M.D. Medical School of Maine, Brunswick, 1876; a member of the American Medical Association and Gynecological Society of Boston; visiting surgeon to the Whidden Memorial Hospital; consulting surgeon to the Soldiers' Home, Chelsea, and formerly city physician of Everett, Mass.; died at his home in Everett, January 7, aged 57.

Edwin R. Chadbourne, M.D. College of Physicians and Surgeons, New York City, 1879; a member of the American Medical Association, and New York Academy of Medicine; a specialist in diseases of children; formerly of New York City; died suddenly at his home in Pasadena, Cal., January 10, from emphysema, complicating an acute bronchitis, aged 53.

Henry L. Goodman, M.D. Missouri Medical College, St. Louis, 1893; a member of the American Medical Association; for ten years medical inspector in the Department of Health of New York City; died at his home in New York City, January 11, from the effects of carbolic acid said to have been self-administered while mentally irresponsible, aged 36.

Stewart V. Groesbeck (license, S. D., 1887), a member of the American Medical Association; a veteran of the Civil War; formerly postmaster of Marshall, Minn.; register of deeds and coroner of Lyon County, Minn.; surgeon at the National Home for Disabled Volunteer Soldiers, Hot Springs, S. D.; died in that institution, December 31, aged 68.

Joseph Harris Stonestreet, M.D. College of Physicians and Surgeons, Baltimore, 1885; a member of the Medical and Chirurgical Faculty of Maryland; school commissioner of Montgomery county; and local surgeon for the Baltimore and Ohio Railroad; died at his home in Barnesville, January 13, from pneumonia, aged 48.

Henry D. Sill, M.D. College of Physicians and Surgeons, New York City, 1892; a member of the American Medical Association, and president of the Medical Society of Otsego County; physician to Thanksgiving Hospital, Cooperstown, N. Y.; died at his home in Cooperstown, January 11, from typhoid fever, aged 42.

Walter J. Russell, M.D. Jefferson Medical College, Philadelphia, 1889; a member of the American Medical Association, and once president of the McKean County (Pa.) Medical Society; formerly visiting physician to Bradford Hospital; died at the State Hospital for the Insane, Warren, January 8, aged 48.

James Wallace, M.D. Rush Medical College, 1879; of Newport, Ind.; a member of the Indiana State Medical Association; a member of the local board of U. S. Pension Examining Surgeons; died at the home of his sister in Cayuga, Ind., January 18, from cancer of the prostate and intestines, aged 59.

Benjamin Franklin Betts, M.D. Hahnemann Medical College, Philadelphia, 1868; professor of gynecology in his alma mater from 1876 to 1895; consulting gynecologist to Hahnemann Hospital, Philadelphia; died suddenly, from heart disease, at his home, January 16, aged 63.

Simon P. Deahofe, M.D. Medical College of Ohio, Cincinnati, 1882; a member of the American Medical Association; died at his home in Mineral Point, Wis., January 7, from the effects of a gunshot wound of the skull, self-inflicted, while temporarily insane, aged 56.

William B. Anderson, M.D. Kentucky School of Medicine, Louisville, 1861; University of Louisville, 1885; major and surgeon in the Confederate service during the Civil War; died at his home in Vincennes, Ind., January 4, from acute cystitis, aged 69.

James Richard Johnson, M.D. University of Iowa, Keokuk, 1869; a veteran of the Civil War; died suddenly at his home near Avenstoke, Ky., January 15, from heart disease, complicated with pneumonia and cancer of the liver, aged 64.

Henry Clay Allen, M.D. Cleveland Homeopathic Medical College, 1861; Queen's University, Kingston, Ont., 1872; dean and professor of materia medica in Hering Medical College, Chicago; for several years editor of the *Medical Advance;* died at his home in Chicago, January 22, from heart disease, aged 72.

Ingeborg Taustrom, M.D. University of Stockholm, Sweden, 1886; Harvard Evening Medical College, Chicago, 1896; a member of the American Medical Association; died at her home in Finlayson, Minn., June 13, aged 55.

James Miller Ross, M.D. Eclectic Medical College of Philadelphia, 1857; coroner of Clearfield County, Pa.; and the oldest practitioner of DuBois; died at the home of his son-in-law in Brockwayville, January 4, aged 79.

G. H. Gilreath, M.D. Atlanta (Ga.) Medical College, 1883; died December 24, at his home near Farmington, Ga., aged about 60.

Frank Clay Maxon, M.D. Eclectic Medical College of the City of New York, 1878; some time coroner of Columbia county, N. Y.; trustee and health officer of Chatham; died at his home January 6, aged 68.

A. M. D. Hendrickson, M.D. University of Tennessee, Nashville, 1879, 1881; University of Louisville, 1884; in 1902 a member of the Indiana State Legislature; died at his home in Magnet, January 7, aged 54.

Lucy Harkey Adams, M.D. Northwestern Ohio Medical College, Toledo, 1890; Grant University, Chattanooga, Tenn., 1901; died at her home in Beechview, Pittsburg, January 11, from pneumonia, aged 51.

Langdon Cheves Nesbitt, M.D. Medical College of the State of South Carolina, Charleston, 1850; died at his home in Woodruff, S. C., October 10, from malignant disease of the kidney, aged 82.

William Aitcheson, M.D. University of Michigan, Ann Arbor, 1873; a member of the American Medical Association; died at his home in Ortonville, Mich., January 10, from pneumonia, aged 62

George Green, M.D. Rush Medical College, Chicago, 1870; of Aurora, Ill.; died at the home of his sister in Waltham, Mass., January 9, from typhoid fever complicating pneumonia, aged 74.

Clarence L. Freidline, M.D. Eclectic Medical Institute, Cincinnati, 1903; coroner of Somerset County, Pa.; died at his home in Stoyestown, from disease of the stomach, January 11, aged 30.

John Lincoln Gardner, M.D. Rush Medical College, Chicago, 1883; a member of the American Medical Association; died at his home in Rochelle, Ill., January 15, from pneumonia, aged 53.

Andrew Henry Getty, M.D. New York University, New York City, 1897; a member of the Medical Society of the State of New York; died at his home in Athens, January 14, aged 59.

Harold Carl Geyer, M.D. College of Physicians and Surgeons, New York City, 1901; of Cold Springs, N. Y.; died in Frankfort, Germany, January 9, from diabetes, aged 34.

Mary Winegar Moody, M.D. University of California, San Francisco, 1882; a member of the Medical Society of the State of California; died recently in San Francisco.

D. W. Callahan (license, Ohio, 1896); a practitioner of Gustavus, Ohio, for more than twenty years; died suddenly at his home, January 13, from cerebral hemorrhage.

Cadwallader Hicks, M.D. University of Louisville, 1872; a member of the American Medical Association; died at his home in Mount Vernon, Ind., January 12, aged 61.

H. Clay Davis, M.D. University of Louisville, 1858; a member of the Kentucky State Medical Association; died at his home in Braxton, January 11, from pneumonia.

Harvey C. Heald, M.D. College of Physicians and Surgeons, Chicago, 1899; of Millard, Neb.; died in a hospital in Omaha, January 10, from disease of the liver, aged 35.

Charles Wilson Bresenham, M.D. Boston University, 1880; of Millers Falls, Mass.; died suddenly in Athol, Mass., January 9, from acute alcohol poisoning.

Seymour Chauncey Wilcox, M.D. Geneva (N. Y.) Medical College, 1841; died at his home in New Albany, Ind., January 12, from senile debility, aged 90.

Joseph A. Muenich, M.D. Rush Medical College, Chicago, 1879; died at his home in Jefferson, Wis., January 7, from cerebral hemorrhage, aged 64.

Johannes R. Bielenburg, M.D. (license, Iowa, 1886); died at his home in Keystone, Iowa, January 7, from carcinoma of the stomach, aged 75.

Sorin S. Ewell, M.D. Medico-Chirurgical College of Philadelphia, 1881; died at his home in Vienna, Md., January 8, from pneumonia, aged 82.

Frank M. Smith, M.D. University of Louisville, 1876; died at his home in Cloverport, Ky., December 25, after a lingering illness, aged 63.

John A. Gordon, M.D. Memphis (Tenn.) Hospital Medical College, 1887; died at his home in Healdton, Okla., January 2, aged 70.

John Easton, M.D. McGill University, Montreal, 1852; died at his home in Brockville, Ont., January 11, aged 87.

Kensey Johns, M.D. Medical College of Virginia, Richmond, 1847; died at his home in Norfolk, January 3, aged 85.

Book Notices

SYNTHÈSE ET CONSTITUTION DES ALBUMINOÏDES. (Les Actualités Chimiques et Biologiques. No. 10) Par Emm. Pozzi-Escot. Paper. Pp. 110. Price, 1.50 francs. Paris: Jules Rousset, 1909.

This pamphlet gives a good account of the character and reactions of the proteins, of the products of their decomposition and the conception of their constitution obtained by this method. The various attempts at synthesis are described and the results achieved are detailed. The hope is expressed that eventually the synthesis of proteins as they exist in the organism will become possible and that in the gradual progress we shall arrive at a thorough knowledge, not only of the constitution and properties of the proteins themselves, but also of those intermediate products of their decomposition which constitute the toxins and antitoxins that play so large a part in the pathogenesis and therapy of disease.

A MANUAL OF DISEASES OF CHILDREN. By John Ruhräh, M.D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. Second Edition. Thoroughly Revised. Pp. 423, with illustrations. Flexible Leather. Price, $2.00. Philadelphia: W. B. Saunders Co., 1908.

This book has been revised and brought up to date. Important additions are the chapters on medical inspection of school children, danger of contagion after infectious diseases, and return of children to school after exposure to contagion. The list of bibliographic references is fairly complete and unlike most bibliographies the references are accessible, being confined, practically, to articles in the English language.

DISEASES OF THE EAR. By Hunter Tod, M.A., M.B., B.C. (Cantab.), F.R.C.S. (Eng.), Aural Surgeon to the London Hospital. Cloth. Pp. 317, with illustrations. Price, $3.00. New York: Oxford University Press, 1907.

This work is practical and concise, and should be of value to the general practitioner who is frequently the first to be consulted in diseases of the ear, especially in small towns. The chapter on aural complications of acute infectious and other diseases is good, but too short. The book is not intended for the specialist.

NEUROLOGIC AND MENTAL DIAGNOSIS, A MANUAL OF METHODS. By L. Pierce Clark, M.D., Senior Attending Physician, Hospital for Nervous Diseases, New York, and A. Ross Diefendorf, M.D., Lecturer in Psychiatry in Yale University. Cloth. Pp. 188, with illustrations. Price, $1.25. New York: Macmillan Company, 1908.

The object of this volume, as stated in the introductory note, is "to aid the student and general practitioner to make thorough and systematic examinations in nervous and mental diseases." It consists of two sections, one on neurologic diagnosis by Dr. Clark and the other on methods of examination in cases of mental disorder by Dr. Diefendorf, to which is appended a glossary of terms used in psychiatry. In the first section Dr. Clark gives a very fair summary of methods, covering most of the needs of the general practitioner, which is made more useful by the numerous illustrations. Instructive examples of methods of recording case histories are given and, while the section is not exhaustive by any means and would not completely fortify the practitioner against a rigid examination by a clever and well-crammed lawyer in a medicolegal case, as in the noted Thaw trial, it will be a fairly useful guide in diagnosis. Some of the more or less important symptoms which are not specially mentioned will be called to the attention of the observant student by the methods of examination here suggested. The second part, that on mental diagnosis, consists of a chapter on history-taking and mental and neurological examination, followed by one containing a series of clinical cases intended "to demonstrate these methods and give an insight into the more common forms of insanity." This first chapter is comparatively brief and to the point. The plan of the second is to give typical cases, according to the now popular classification of Kraepelin. The trouble will be in the atypical ones, which are sufficiently numerous to be considered. The glossary of psychiatric terms is decidedly incomplete, and some of the definitions could be improved; the ordinary conception of alcoholic pseudoparesis, for example, is not, we believe, that of hallucinatory dementia in which the symptoms of Korsakoff's disease exist; and a

number of such frequently used terms as "psychasthenia," "cyclothymia," etc., are not included. Elsewhere in the book there are one or two slips of the proof-reader which may be mentioned, such as the use of the contraction for minims instead of millimeters in esthesiometric measurements and employment of the term "astereognostic sense," which seems hardly correct. These, however, are minor defects that are not misleading or important. The book as a whole will be found useful by those for whom it is intended.

MEANS FOR THE PROLONGATION OF LIFE. Third and Enlarged Edition of a Lecture Delivered Before the Royal College of Physicians on Dec. 3, 1903. By Sir Hermann Weber, M.D., F.R.C.P., Consulting Physician to the Mount Vernon Hospital for Consumption. Cloth. Pp. 214. Price, $1.00. London: John Bale Sons & Danielsson, Ltd., 1908.

There is nowhere to be found a more rational and succinct account of the hygiene of mature life than is contained in the 200 pages of Sir Hermann Weber's book, which with the present issue reaches its third edition. Weber refrains from any detailed description of the underlying pathology of senescence and avoids discussion of the abstruse problems surrounding that subject, which have lately engaged the attention of Metchnikoff, Minot and others. The book aims to accept the facts of the situation without controversy, and on a practical basis to lay down the rules of hygiene best adapted to preserve health and vigor in old age and postpone the advent of senility. There is a directness and simplicity about the manner in which the subject is developed that makes this little book an interesting and impressive one. The language is simple, dignified and untechnical. The book can be recommended to intelligent lay readers as well as to the medical profession.

ARTERIOSCLEROSIS. By Louis M. Warfield, A.B., M.D., Instructor in Medicine, Washington University Medical Department. Introduction by W. S. Thayer, M.D., Professor of Clinical Medicine, Johns Hopkins University. Cloth. Pp. 165, with illustrations. Price, $2.00. St. Louis: G. V. Mosby Medical Book Co., 1908.

This monograph on a most important subject contains nothing new and is not a satisfactory compilation of what is known. The style is discursive and sometimes colloquial. The first two chapters are devoted to anatomy and physiology, the latter subject occupying only eight pages. The chapter on pathology is one of the best in the book. We had hoped for a full consideration of the symptomatology and diagnosis of arteriosclerosis in the various organs and parts of the body, but the subject is not dealt with as systematically or as fully as is desirable. In the pages devoted to symptoms Warfield says: "The epileptiform and apoplectiform attacks which occur in Stokes-Adams disease are due to the sclerosis of the cerebral vessels." This is a generalization, the truth of which, we believe, has not been demonstrated. The last pages summarize what has been said at greater length in earlier ones.

AN INQUIRY ON ENTERIC FEVER IN INDIA, Carried Out at the Central Research Institute, Kasauli, Under the Direction of Lieutenant-Colonel D. Semple, M.D., Director of the Institute, and Captain E. D. W. Greig, M.D. No. 32 of Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India. Cardboard. Pp. 108. Price, 1s. 2d. Calcutta: Superintendent Government Printing, 1908.

In this memoir great stress is laid on the importance of the typhoid-carrier in spreading typhoid fever in India. As the result of numerous experiments and observations the conclusion is reached that the conditions encountered outside a human host are not favorable to the prolonged existence of the typhoid bacillus. It will be noted that this conclusion is in harmony with many recent experiments on the vitality of the typhoid bacillus in water and soil. The writers of this memoir state without reservation that the problem of the prevention of typhoid fever among the British troops in India is the detection and isolation of the individuals harboring typhoid bacilli.

A LABORATORY GUIDE FOR HISTOLOGY. By Irving Hardesty, A.B., Ph.D., Associate Professor of Anatomy in the University of California; with a chapter on laboratory drawing by Adelbert Watts Lee, M.D., Assistant in Anatomy in the University of California. Cloth. Pp. 193, with 30 illustrations, 2 in color. Price, $1.50. Philadelphia: P. Blakiston's Son & Co., 1908.

This volume is well prepared, and the sequence of subjects is good, so that no teacher would err in adopting the book for his use. The chapter on laboratory drawing is not only unique, but valuable, inasmuch as the importance of drawing specimens can not be overestimated as an aid in study. As is so often the case, too much time is given to the study of the central nervous system in proportion to that devoted to the other tissues and organs.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

KANSAS: Topeka, Feb. 9. Sec., Dr. R. A. Light, Chanute.
NEBRASKA: State Capitol, Lincoln, Feb. 3-4. Sec., Dr. E. J. C. Sward, Oakland.
NEW YORK: Albany, Feb. 2-5. Chief of Examinations Division, Dr. Charles F. Wheelock.
WYOMING: Cheyenne, Feb. 10-12. Sec., Dr. S. B. Miller, Laramie.

The Ohio Association of Medical Teachers

The fourth annual meeting of the Ohio Association of Medical Teachers was held in Columbus, December 28. The following papers were read: "What Should Be Taught in Anatomy," W. E. Lewis, Miami Medical College, Cincinnati; "A Graded Anatomy Course," Chas. W. Moots, Toledo Medical College; "Methods in Teaching Internal Medicine," C. F. Hoover, Medical Department Western Reserve University, Cleveland; "What Should Be Taught the Medical Student in Chemistry," J. U. Lloyd, Eclectic Medical College, Cincinnati; "The Medical Flavor in Medical Chemistry," Park L. Myers, Toledo Medical College; "Pedagogic Methods in Medical Colleges," W. J. Means, Starling-Ohio Medical College, Columbus; "Recent Changes in State Medical Law and a Report of the Work of the State Medical Board for the Past Year," E. J. Wilson, State Medical Board; "The University Idea," C. E. Walton, Pulte Medical College, Cincinnati; "The Teaching of Pediatrics," S. W. Kelly, Cleveland College of Physicians and Surgeons; "The Proposed Requirement of One Year of Literary College Work as a Prerequisite to Entrance to a Medical College," E. J. Wilson, State Medical Board.

There was practical unanimity as to the advisability of the colleges in Ohio raising their entrance requirement to include one year of literary college work in biology, chemistry and physics. The association passed a resolution commending the State Medical Board for conducting practical examinations in biology, bacteriology and embryology and recommended that clinical medicine be added to the list of branches in which such examinations are conducted.

The following officers were elected for the ensuing year: President, Dr. James U. Barnhill, Columbus; vice-presidents, Drs. W. E. Lewis, Cincinnati, and J. A. Thompson, Cincinnati; secretary, Dr. E. I. McKesson, Toledo; treasurer, Dr. Charles W. McGavran, Columbus. The executive committee consists of the above officers and the following: C. E. Walton, Kennon Dunham and J. K. Scudder, Cincinnati, W. S. Kelly and F. C. Waite, Cleveland.

Louisiana Homeopathic November Report

Dr. C. R. Mayer, president of the State Board of Medical Examiners (Homeopathic), reports the written examination held at New Orleans, Nov. 2, 1908. The number of subjects examined in was 10; total number of questions asked, 40; percentage required to pass, 75. Only one candidate, a graduate of the University of Michigan, 1908, appeared for examination and he passed with an average of 92 per cent.

District of Columbia April, July and October Reports

Dr. George C. Ober, secretary of the Board of Medical Supervisors, reports the written examinations held at Washington, April, July and October, 1908. The number of subjects examined in was 17; total number of questions asked, 80; percentage required to pass, 75.

At the examination held in April, the total number of candidates examined was 17, of whom 10 passed and 7 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
George Washington Univ.	(1905) 75.9; (1907) 78.8, 79.7,	82
Georgetown University	(1905)	77.7
Howard University, Washington	(1907)	80.6
Woman's Med. Coll. of Baltimore	(1906)	77.6
New York University Med. Coll.	(1891)	81.8
University of Pennsylvania	(1906)	89.6
University of Edinburgh, Scotland	(1896)	82
FAILED		
National University, Washington	(1901)	51.5
George Washington University	(1907) 62.7,	68.0
Howard University, Washington	(1907)	49.6
Maryland Med. Coll.	(1907)	62.5
Tufts Coll. Med. School	(1900)	63.1
Jefferson Med. Coll.	(1882)	63

At the examination held in July, the total number of candidates examined was 35, of whom 21 passed and 14 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Howard University, Washington	(1907) 87; (1908)	83.6
Georgetown University	(1907) 85.6; (1908)	85.6
George Washington University, (1905) 81.7; (1907) 75.4, 85.5; (1908) 77.4, 79.2, 79.6, 82, 84.9, 85, 86.5, 86.9, 89.9, 90.2.		85.1, 88.5,
Johns Hopkins Med. School	(1908)	86.9
Woman's Med. Coll. of Pennsylvania	(1908)	96.4
FAILED		
National University, Washington	(1902)	64.9
George Washington University, (1907) 70.7, 74; (1908) 64.9, 71.2.		56.8,
Howard University	(1907) 54.9, (1908)	73.5
Georgetown University	(1903)	72.5
Tulane University of Louisiana	(1903) 68.4; (1908)	70.7
Baltimore Med. Coll.	(1907)	55
Leonard Med. School	(1908)	43
Jefferson Med. Coll.	(1908)	73.4

At the examination held in October the total number of candidates examined was 27, of whom 14 passed and 13 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Columbian University, Washington	(1904)	76.7
George Washington University, (1906) 75.1; (1908) 75.3, 77.8, 81.1.		75.9,
Howard University, Washington	(1908)	83.8
Georgetown University	(1908) 76.6, 77.1, 85.4,	80.9
Johns Hopkins Med. School	(1906)	79.2
Baltimore Med. Coll.	(1908)	78.1
Harvard Med. School	(1898)	81
FAILED		
National University, Washington	(1902)	58.9
Howard University	(1908) 65.2, 74.6,	74.7
George Washington University, (1905) 47.5; (1907) 71.8; (1908) 67.8, 69.4, 72.7.		
Tulane University of Louisiana	(1908)	71.8
Maryland Med. Coll.	(1908)	56.5
Baltimore Med. Coll.	(1907)	63.8
Jefferson Med. Coll.	(1908)	74.5

Kentucky November Report

Dr. J. N. McCormack, secretary of the Kentucky State Board of Health, reports the written examination held at Louisville, November 17-19, 1908. The number of subjects examined in was 10; percentage required to pass, 70. The total number of candidates examined was 43, of whom 19 passed and 24 failed. Two candidates were licensed without examination, one through reciprocity and the other under the exemption clause. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
University of Louisville	(1908) 73, 76, 79, 79, 83, 83, 84	
Louisville and Hospital Med. Coll., (1906) 78; (1908) 72, 73, 74, 79, 83.		
Kentucky School of Med.	(1908)	80, 81
Hospital Coll. of Med., Louisville	(1906)	72
Barnes Med. Coll.	(1904)	80
Woman's Med. Coll. of Pennsylvania	(1907)	90
Meharry Med. Coll.	(1908)	71

FAILED	Total Grad. No.	Total Exam'd.
Louisville and Hospital Med. Coll.	(1908)	10
University of Louisville	(1907) (7, 1908)	8
Kentucky School of Med.	(1908)	2
Louisville National Med. Coll.	(1908)	1
University of Tennessee	(1908)	1
Meharry Med. Coll.	(1908)	2

LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University of Pennsylvania	(1903)	Virginia

LICENSED UNDER EXEMPTION CLAUSE	
University of Louisville	(1899)

Massachusetts November Report

Dr. Edwin B. Harvey, secretary of the Board of Registration in Medicine, reports the written and oral examination held in Boston, November 10-12, 1908. The number of subjects examined in was 13; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 77, of whom 53 passed, including 2 non-graduates, and 24 failed, including 2 non-gaduates. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Illinois Med. Coll.	(1903)	76.3
American Med. Miss. Coll.	(1906)	75
Chicago Coll. of Med. and Surg.	(1908)	75.5
Johns Hopkins Med. School	(1905)	80.7
College of P. and S., Baltimore	(1907) 81.2; (1908)	77.3
Baltimore Med. Coll.	(1908) 76.5,	82.5
University of Maryland	(1908)	79.8
Medical School of Maine	(1906)	77
Harvard Med. School, (1906) 80.2; (1907) 83; (1908) 75, 79.5, 80, 80.8, 82, 84.		77.6,
Tufts Coll. Med. School, (1906) 81.4; (1908) 75, 75, 75.3, 75.8, 76.2, 76.4, 76.5, 76.7, 76.9, 77, 77.4, 79.5, 80, 80.		75.7,
College of P. and S., Boston	(1905) 75, 77; (1908)	75.9
Boston University	(1907)	75
University of Michigan	(1907)	77
Dartmouth Med. School	(1907)	80.8
Long Island Coll. Hospital	(1906)	80.8
University and Bellevue Hosp. Med. Coll.	(1906) 79.1; (1907)	82.2
North Carolina Med. Coll.	(1904)	75.2
Cleveland Homeopathic Med. Coll.	(1880)	82.4
Woman's Med. Coll. of Pennsylvania	(1908)	80.9
University of Vermont	(1906) 77.7; (1908) 78.4,	82.2
University of Athens, Greece	(1900)	75
FAILED		
Howard University, Washington	(1907)	70.4
Chicago Coll. of Med. and Surg.	(1908)	57.3
Hahnemann Med. Coll. and Hosp., Chicago	(1885)	62.3
Baltimore Med. Coll., (1905) 60.2, 60.2, 73; (1908) 70, 70.3, 73.5, 73.5.		73.4,
Maryland Med. Coll.	(1908)	63.5
Boston University	(1908)	73.2
Tufts Coll. Med. School	(1908) 69.7, 69.7	70.9
College of P. and S., Boston	(1908) 58, 64.3	65.8
University Coll. of Med., Richmond	(1907)	56.1
Laval University, Canada	(1905)	63.6
University of Palermo, Italy	(1891)	67

Missouri November Report

Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, reports the written examination held at Kansas City, November 23-25, 1908. The number of subjects examined in was 12; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 46, of whom 25 passed and 21 failed. The following colleges were represented:

College	Year Grad.	Total No. Exam'd
PASSED		
Hahnemann Medical College and Hospital, Chicago	(1903) (1906)	2
Rush Med. Coll.	(1901)	1
Keokuk Med. Coll., Col. P. and S.	(1908)	1
University of Kansas	(1908)	1
University of Louisville	(1907)	1
Kentucky School of Med.	(1908)	1
Baltimore Med. Coll.	(1908)	1
Johns Hopkins Med. School	(1906)	1
St. Louis University	(2, 1906) (2, 1908)	4
University Med. Coll., Kansas City	(1908)	1
Homeopathic Med. Coll. of Missouri	(1908)	1
Kansas City Hahnemann Med. Coll.	(1908)	2
Washington University, St. Louis	(1906) (1908)	2
Western Reserve University	(1907)	1
University of Pennsylvania	(1903)	1
Woman's Med. Coll. of Pennsylvania	(1907)	1
Meharry Med. Coll.	(1908)	2
University of Palermo, Italy	(1893)	1
FAILED		
University of Arkansas	(1908)	1
Washington University, St. Louis	(1908)	2
Kansas City Hahnemann Med. Coll.	(1908)	1
University Med. Coll., Kansas City	(1908)	3
St. Louis Coll. of P. and S., (1906) (1907)	(4, 1908)	6
Barnes Med. Coll.	(1907)	1
American Med. Coll., St. Louis	(1906) (1908)	2
Ensworth Med. Coll.	(1908)	1
Creighton Med. Coll.	(1908)	1
Lincoln Med. Coll.	(1907)	1
Meharry Med. Coll.	(1907) (1908)	2

Nebraska November Report

Dr. E. J. C. Sward, secretary of the Nebraska State Board of Health, reports the written examination held at Lincoln, Nov. 4-5, 1908. The number of subjects examined in was 8;

total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 18, of whom 16 passed and 2 failed. Seventeen reciprocal licenses were granted at this meeting. The following colleges were represented:

College.	Year Grad.	Per Cent.
PASSED		
Hahnemann Med. Coll. of the Pacific	(1908)	86.8
Denver and Gross Coll. of Med.	(1908)	86.8
College of P. and S., Chicago	(1888)	90
College of P. and S., Keokuk	(1896)	89
Louisville Med. Coll.	(1907)	90.7
University of Nebraska, (1891) 88; (1895) 85; (1897) 90; (1902) 80, 84; (1903) 88.		
Creighton Med. Coll.	(1908)	76, 84.1
Lincoln Med. Coll.	(1908)	79.5
University of Pennsylvania	(1889)	90.7
Meharry Med. Coll.	(1908)	82.8
FAILED		
Creighton Med. Coll.	(1908)	*73.6
Nebraska Coll. of Med.	(1908)	*67.1

LICENSED THROUGH RECIPROCITY

College.	Year Grad.		Reciprocity with
Hahnemann Med. Coll., Chicago	(1907)	(1908)	Illinois
Northwestern Univ. Med. School		(1908)	Illinois
Chicago Col. of Med. and Surg.		(1908)	Illinois
College of P. and S., Chicago		(1905)	Illinois
Rush Med. Coll.	(1904)	(1907)	Illinois
Dunham Med. Coll.		(1900)	Illinois
Hering Med. Coll.		(1908)	Illinois
Curtis-Physio Medical Institute		(1894)	Nevada
College of P. and S., Baltimore		(1896)	Illinois
University of Minnesota		(1895)	Minnesota
Barnes Med. Coll.		(1908)	Illinois
Creighton Med. Coll.		(1907)	Iowa
Lincoln Med. Coll.		(1908)	Kansas
University of Nashville		(1899)	Kansas
Medical Coll. of Virginia		(1900)	W. Virginia

* Second examination.

New Jersey October Report

Dr. J. W. Bennett, secretary of the New Jersey State Board of Medical Examiners, reports the written examination held at Trenton, Oct. 20-21, 1908. The number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 56, of whom 40 passed and 16 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Yale Medical School	(1908)	80.8, 82.7
Howard University, Washington	(1907) 79.4; (1908)	80, 82.2
Medical Coll. of Georgia	(1901)	75.4
Hahnemann Med. Coll., Chicago	(1908)	79.9
College of P. and S., Baltimore	(1907) 75.4; (1908)	82.1
University of Maryland	(1908)	82.1
Baltimore Med. Coll.	(1906) 79.5; (1907) 75; (1908)	79.5, 79.8
Johns Hopkins Med. School	(1906) 85.7; (1908)	80.8
University and Bellevue Hosp. Med. Coll.	(1908)	79.3, 82.3
Long Island Coll. Hosp.	(1906) 83.3; (1908)	77.3, 79.2
Cornell Univ. Med. Coll.	(1908)	86.7
Columbia Univ. Coll. of P. and S., New York	(1904) 81.1; (1906) 81.6; (1907)	81.8
Western Pennsylvania Med. Coll.	(1908)	78.7
University of Pennsylvania	(1907) 75.4, 85.2; (1908)	84.9, 86.7
Jefferson Med. Coll.	(1899) 75.5; (1908)	82.8, 88.8
Hahnemann Med. Coll., Philadelphia	(1906)	81.1
Woman's Med. Coll. of Pennsylvania	(1905)	83
Medico-Chirurgical Coll., Philadelphia	(1908)	80.8, 82.2
University of Vermont	(1907)	76
McGill University Quebec	(1905)	79.8
Queen's University, Ontario	(1908)	85.4
FAILED		
University of California	(1905)	73.4
University of Louisville	(1907)	67.5
Kentucky School of Med.	(1906)	62.5
Maryland Med. Coll.	(1908)	69
Baltimore University	(1903)	67.7
University of Michigan	(1880)	67.4
Long Island Coll. Hospital	(1881) 71.5; (1907)	73.7
New York University Med. Coll.	(1880)	71.3
Albany Med. Coll.	(1902)	71.2
Hahnemann Med. Coll., Philadelphia	(1895)	73
University of Naples, Italy, (1896) 68.3; (1905) 65.8; (1906)		71.7
University of Rome, Italy	(1896)	67
Royal University of Turin, Italy	(1900)	69.7

New Mexico October Report

Dr. J. A. Massie, secretary of the New Mexico Board of Health and Medical Examiners, reports the written examination held at Santa Fe, Oct. 12, 1908. The number of subjects examined in was 13; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 7, of whom 6 passed and 1 failed. Twenty-five applicants were licensed on presentation of satisfactory credentials. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
George Washington University	(1908)	88.8
Southern Med. Coll., Atlanta	(1886)	75
Barnes Med. Coll.	(1908)	77.3
University of Tennessee	(1888) 78.4; (1890)	76.3
University of Nashville	(1905)	79.6
FAILED		
Medical Coll. of Georgia	(1907)	73.3

LICENSED ON CREDENTIALS

College	Year of Grad.		
George Washington Univ.	(1900)		
Atlanta Med. Coll.	(1875)		
Northwestern Univ. Med. Coll.	(1894)	(1906)	
Indiana Med. Coll.		(1906)	
University of Iowa		(1883)	
University of Kansas		(1890)	
Louisville Med. Coll.	(1876)	(1894)	(1905)
University of Louisville	(1895)	(1898)	
Hospital Coll. of Med., Louisville		(1906)	
Kentucky School of Med.		(1893)	
College of P. and S., Baltimore		(1906)	
University of Michigan		(1874)	
Missouri Med Coll.	(1880)	(1896)	
University Med. Coll., Kansas City		(1903)	
St. Louis Coll. of P. and S.		(1900)	
Marion-Sims Beaumont Coll. of Med.	(1899)	(1903)	
University of Buffalo		(1906)	
Medical Coll. of Ohio		(1900)	
Memphis Hospital Med. Coll.		(1891)	

Society Proceedings

AMERICAN ASSOCIATION FOR CANCER RESEARCH

Meeting held at University of Pennsylvania, Nov. 27, 1908

The President, DR. JAMES EWING, New York, in the Chair

The Antitryptic Power of Cancer Sera

DR. RICHARD WEIL, New York: During the year a new property supposed to be characteristic of cases of cancer has been described. This is the so-called antitryptic power of the blood serum. It has been known for some years that the blood of an animal can be made to develop an antiferment to trypsin by administering subcutaneous injections of pancreatic extract. Recently it has been shown that the serum of untreated animals inhibits the action of trypsin in varying degrees. Brieger and Trebing, in a series of investigations, showed that this antitryptic power was present in 91.6 per cent. of human cancer cases, and in only 23.7 per cent. of other cases. They used the serum plate method of Marcus. Recently Bergmann and Meyer tested the antitryptic power of the serum in 20 cases of cancer and in 91 of other diseases; they found an antitryptic action of the serum in 92.7 per cent. of the cancer cases and in 24.2 per cent. of non-cancerous cases. They used the casein method of Gross. The two sets of results agree closely. In my work, 22 cases of cancer, 2 of rodent ulcer, and 29 non-cancerous cases were examined in regard to the antitryptic power of the serum. The results obtained by the serum plate method and the casein method were compared and found to agree fairly well. In both methods the proteolytic action is tested. The serum plate method is less reliable and sharp cut than the casein method. By the latter method the following results were obtained: In the cancer cases, 82 per cent. were positive, 18 per cent. negative. In the non-cancerous cases, 25 per cent. were positive and 75 per cent. were negative. Neither case of rodent ulcer was positive. The terms positive and negative denote accurately measurable quantative differences in the antitryptic power of the serum. These results are not so striking as those obtained by the German observers; nevertheless, they demonstrate that the reaction is almost twice as frequent in cases of cancer as in other diseases. This may be regarded as additional evidence of certain striking alterations in the biologic characteristics of the serum in cancer. The method at present is not of diagnostic value.

Hemolytic Effects of Human Serum

DR. RICHARD WEIL, New York: About a year ago I reported that in dogs affected with lymphosarcoma the serum was frequently hemolytic toward the red cells of normal dogs, and that this hemolytic action was resisted by the red cells of other dogs growing the same form of tumor. On the basis of a number of preliminary observations I hazarded the statement that in human cancer an analogous condition would be

found. Since then, this hypothesis has been amply vindicated by the work of Crile, Janeway, Epstein and Ottenberg, and Blumgarten along the same line of investigation. The characteristic reaction failed to occur in incipient cases of cancer unless complicated by some other condition. It was absent in the majority of cases of rodent ulcer. It occurred only in cases in which the new growth gave microscopic or macroscopic evidence of necrosis. The tendency was for the reaction to disappear in cases of open or ulcerated growths. The reaction occurred in a certain number of other conditions. The following interpretation of these facts is offered for consideration: The hemolytic power of the serum is not due to any substance or action peculiar to cancer. It may be due either directly to the absorption of the products of tissue necrosis or autolysis, or it may be the result of some reaction to these products. The same explanation holds of the majority, though not all, of the cases of other diseases in which the same serum reaction is obtained. This includes cases of tuberculosis, gummatous syphilis, resolving pneumonia, breaking down fibroids, Hodgkin's disease, and other conditions in which necrosis, caseation, or autolysis of tissue occurs. So far as the diagnostic posibilities of this method are concerned, more facts must be gathered before any practical application should be attempted. For the present, the method is not available for clinical purposes.

Results of Testing Blood Serum in Thirty-five Cases of Cancer, for Hemolytic Properties on the Normal Red Blood Corpuscles

DR. H. H. JANEWAY, New York: In the technic used 1 c.c. of serum was mixed with a 10 per cent. emulsion of red cells, which had been washed 4 times. Six mixtures, including the controls with normal serum and salt solution, were prepared for each test. Of the 35 tested, 8 were a very early stage of cancer of the face of the rodent ulcer type. They were all negative, and it has seemed wise to exclude these from the percentages, as both clinically and pathologically they are at least for such a long time in their history, so different from the usual form of cancer. Of the two late cases of rodent ulcer, both were large steadily advancing and ulcerated growths. One gave a reaction, while the other did not. Including these in the remaining 27 cases, there were 20 late cases of malignant tumors, of which 8 yielded a positive reaction, or 40 per cent. There were 7 cases of early malignant tumors, of which 4 were positive, or 57 per cent. Of the normal sera none showed any hemolysis, but one case of chronic mastitis, used as a control, did show marked hemolysis. As compared with normal sera, it is evident that the possession of isohemolysins is a striking feature of the sera of patients with malignant disease. The diagnostic value of the reaction may be considered from two standpoints. If negative, it is clear that the case can not be regarded with certainty as free from cancer. If positive it is to be regarded with likelihood, as a case of malignant disease, provided certain complicating infections giving the same reaction, such as advanced tuberculosis, can be excluded. Although I have not examined other conditions of disease, it is evident from the results of others (Weil, Ascoli, etc.), that the typical reaction occurs in a very small proportion as compared with cases of cancer. It is certain, as previously stated, that, if the serum were tested on a large variety of corpuscles, both from ascertained cases of cancer, and from normal individuals, the percentage of positives could be very considerably increased. Such a technic would not be difficult, if the reaction should become firmly enough established, to permit utilization of only a fractional part of the serum, and the use of the red blood corpuscles from a number of normal individuals: as in these cases, the normal corpuscles can be readily obtained by simply pricking the ear. Such a course would seem to be justifiable, as there is such unanimity among all observers that the serum from normal individuals rarely possesses isohemolytic properties. Tentatively, it might be suggested that in suspected cases of cancer the serum should be tested, as herein described against the normal corpuscles emulsion. If negative, it would be advisable to make a second and more comprehensive test in the manner suggested. At the present stage in our experience, however, sufficient evidence is not at hand to give this test any great diagnostic value.

Deviation of Complement by Means of the Serum of Sarcoma Rats

DR. GEORGE H. A. CLOWES, Buffalo: The hemolytic system employed in this series of experiments consisted of (1) goat corpuscles; (2) amboceptor, serum of a rabbit immunized against goat corpuscles which had been heated to 57 C. in order to destroy complement; (3) complement, normal guinea-pig serum. The tumor extracts employed were (1) 20 per cent. tumor material in absolute alcoholic; (2) 20 per cent. tumor material in 0.25 per cent. aqueous phenol. In this series of experiments the sera of over 50 rats suffering from sarcoma in various stages of development were tested regarding their capacity for deviating complement when used in conjunction with alcoholic or phenol extracts. As a general rule, it may be said that while no deviation was obtained from the sera of rats having large tumors of 50 grams or over, a marked differential effect was to be noted in several cases in which tumors weighing from 2.5 to 5 grams had taken from 10 to 30 days to develop. This reaction was not uniformly obtained. In certain cases, the sera of rats having tumors weighing approximately 5 grams gave no reaction when tested with various concentrations of both alcoholic and phenol extracts. In no case was it found possible to differentiate between serum of normal rats and of those with large tumors by means of this test. It should be noted that while the differential effect was frequently to be noticed whereby rats with small tumors could be distinguished from normal rats and those having large tumors, the sharpness of the test was found to be dependent to a great extent on the guinea-pig complement employed, the sera of certain normal guinea-pigs being apparently unaffected by the deviating bodies present in the rat sarcoma. We tested at the same time the serum of a dog suffering from lymphosarcoma, supplied to us by Dr. Beebe, in comparison with one which had recovered and normal individuals. The heated sera of the dog with a small sarcoma and the recovered dog exhibited a distinct reaction when compared with two normal dogs, using the extract of a rat sarcoma and also of human carcinoma. This same differentiation was still to be noted two weeks later, by which time the small lymphosarcoma had undergone spontaneous recovery. From the results obtained in the series I am forced to the conclusion that the phenomenon of complement deviation bears some relationship to that of immunity exhibited during and after spontaneous recovery, the most marked differential effect being noted in those cases in which tumors develop relatively slowly and recover spontaneously after having reached a weight of approximately 5 grams.

The Hemolysin Test in the Serum of Sarcoma Rats

DR. GEORGE H. A. CLOWES, Buffalo: The same series of rats as that employed in the other experiments was tested with a view to determining the extent to which the serum of an individual suffering from sarcoma is capable of causing hemolysis of normal corpuscles. The animals were divided into three groups, those with large tumors, those with small tumors and normal. Corpuscles and serum were prepared separately from each of these series and tested all against all. In the individual tests 1 c.c. of a 5 per cent. suspension of corpuscles was incubated for two hours with 0.5 c.c. of serum of the rat to be tested, a control series being carried out in which the serum had previously been heated to 57 C. In three such series of experiments in which 36 rats were employed, a very faint hemolysis, scarcely recognizable, was noted in two cases only, those being rats with tumors weighing respectively 2.5 and 4 grams. It would be quite impossible, however, to make use of this test for diagnosis of rat sarcoma.

Transplantations of the Uterus and the Bearing of the Results Obtained on Some Problems of Tumor Growth

DR. LEO LOEB, Philadelphia: Pieces of uterus were transplanted into the subcutaneous tissue of guinea-pigs in approximately fifty cases. In the majority of experiments the

central part of the transplanted piece becomes necrotic, the peripheral parts, unstriated muscle, blood vessels and some glands remain alive. This holds good in experiments in which the pieces were transplanted into another individual of the same species as well as in experiments in which the pieces were transferred into the same individual whose uterus had been extirpated. There was, however, one marked difference in cases in which autotransplantation (transplantation into the same individual) and heterotransplantation (transplantation into another individual of the same species) had taken place. In the former case, in a certain number of cases in which the uterus had been transplanted from two to nine days after ovulation, diciduomata developed in the transplanted piece; in cases in which the uterus had been transplanted into another individual of the same species deciduomata did not develop, with one exception, even if ovulation had taken place from two to nine days before the operation in the animal into which the uterus had been transplanted. There seems, therefore, to be a marked difference between the body fluids of different individuals of the same species, and although such a difference in the body fluid does not prevent the remaining alive of certain parts of the transplanted uterus, it seems, in the majority of cases, to prevent an excess growth leading to the production of deciduomata. There exists an analogous condition in the growth of tumors. In the large majority of cases tumors grow only if transplanted into the same animal in which they have originated; they can not be successfully inoculated into other individuals of the same species. In this case also the difference in the constitution of the body fluids in different individuals of the same species prevents that excess growth which is the characteristic feature of tumor growth. We are therefore able to give a more complete analysis of the factors underlying a certain kind of tumor-like growth than has been possible heretofore. The growth of deciduomata depends on three factors: First, the presence of preparing (sensitizing) substances secreted by the ovaries at certain periods; second, a mechanical stimulus, the energy of which can be quantitatively varied; third; a specific condition of the body fluids which varies in different individuals of the same species.

This report is merely a preliminary one. Further experiments are being carried out and the outcome of these experiments will determine whether or not the conclusions given can be considered as definite.

Characteristics of Spontaneous Cancer in Mice

DR. JOHN W. HUNTER, Philadelphia: During the last two years I have studied spontaneous tumors occurring in 20 mice. In 5 mice the tumors were multiple, 1 mouse having 5 tumors, 3 mice had three tumors, and 1 mouse had 2. All these neoplasms were subcutaneous and for the most part situated on the ventral aspect of the abdomen. These growths usually began with a single unit—a simple acinus. In its further growth the form which the tumor takes is modified by (1) the energy of growth, (2) by the internal pressure, (3) by the resistance of the surrounding tissues. In these tumors three main structures are noted: (1) Simple alveoli, (2) larger ducts or alveoli, (3) cell masses. The larger ducts may show papillary ingrowths The cell masses result from a crowding together of the alveolar structure. They may undergo central degeneration and give rise to ducts or alveoli filled with colloid or empty, or sometimes may show papillary ingrowths. I found fundamental differences in the structure the widest noted being often found in the same tumor. The principal interest which attaches to multiple tumors lies in deciding whether or not they are metastases. In general, I found that the subcutaneous tumors in the same mouse were more nearly alike in structure than the tumors in different mice; but this fact is not at all striking. The nine tumors of Mouse 3, the two of Mouse 5, the three of Mouse 6, and the three of Mouse 15 were all very similar in structure, consisting of small alveoli with more or less tendency to cell massing. Tumors 2 and 3 of Mouse 17 were of slightly different structure from the above, showing small alveoli and large ducts but no cell masses, while Tumor 1 of this mouse revealed a combination of papillary and alveolar formation. This similarity of structure would favor the idea that they are metastases, but, on the other hand, there are many reasons for believing them to be primary growths: (1) Their position is under the skin and not elsewhere; (2) their location is that of primary growths; (3) their origin is not in lymphatic glands; (4) ducts are present in their periphery; (5) they are about the same size.

DISCUSSION

DR. LEO LOEB, Philadelphia: I desire to call attention to one mode by which apparently multiple tumors can be formed in a mouse. In one case I observed that a secondary tumor developed in the subcutaneous tissue of a mouse within a few days in direct approximation to the primary tumor. The most probable interpretation of this observation would be the following: The sprouting out or separation of certain parts of the primary tumor takes place and gives origin to a secondary tumor. Very soon ingrowing connective tissue separates entirely these two new growths. A similar process of new formation has been observed and recently described in lymph glands.

A Mucin-Containing Multilocular Cyst of the Ovary

DR. GUTHRIE MCCONNELL, St. Louis: In 1852, Scherer examined the material obtained from ovarian cysts and found two bodies that he called met-albumin and par-albumin. Further contributions were made by Scherer in 1865 and by Eichwald, but little was added to the original description. In 1882 the subject was taken up by Hammarsten who examined the contents of forty ovarian cysts. As a result of these investigations he concluded that the characteristic element of ovarian fluids was a substance to which he gave the name of pseudomucin. He also was of the opinion that the material called met-albumin by Scherer was the same as pseudomucin, while par-albumin was a mixture of pseudomucin and albumin, the latter largely in the form of serum albumin. Hoppe-Seyler in 1903 was of a similar opinion. In addition to pseudomucin, various substances known as mucoids are present in these tumors. One of these, occurring in the form of a jelly-like material, was described in 1895 by Mitjukoff and given by her the name of paramucin. Briefly summarized, there are mucin, pseudomucin and paramucin, the two latter being found in ovarian cysts, the first, according to Wells, is not found in such growths. In the case of a white woman, aged 45, the material was obtained *intra vitam* and examined chemically by the routine methods. It was found to differ from both pseudomucin and paramucin in its reactions, but to resemble true mucin in the following respects. On being boiled with acid it yielded a product that reduced Fehling's solution, it dissolved in very weak alkali solutions and was precipitated by the addition of acetic acid.

Primary Sarcoma of the Spleen

DR. GUTHRIE MCCONNELL, St. Louis: In February, 1907, a man of 29 strained his left side while lifting a trunk. This was followed by pain and difficulty in breathing. As a result he had to give up his work for two weeks. For several months following he was free from pain, then it again appeared, being worse at night. He finally improved gradually but noticed a swelling on the left side about the ninth rib. This slowly increased in size, but was not painful. In July, 1908, he was operated on, portions of two ribs being removed and the swelling examined. An *x*-ray picture had already shown that the trouble was below the diaphragm. On getting through the chest wall there was opened a cavity about the size of two fists. This was filled by a brownish-red, thick grumous material, resembling broken down splenic tissue The walls of the cavity were smooth. Microscopic examination of the tissue showed it to be spleen but scattered throughout it were found numerous small masses of atypical cells surrounding blood spaces, giving the appearance of a perithelial sarcoma or endothelioma. The patient made an uneventful recovery. Since the operation he has gained in weight, and at present, some four months later, is in good health.

The Reactions of Regenerating Tissues on the Animal Body

DR. CHARLES R. STOCKARD, New York: Experiments have been conducted on animals regenerating new tissues in order

to determine whether or not normal undifferentiated growths exert injurious or malignant effects on the bodies from which they arise. The experiments show that new regenerating tissue has the power to continue growing at the expense and to the exhaustion of the old body tissues. The regenerating part requires a certain amount of food in order to grow, but this food may be obtained in ways which differentiated tissues can not make use of; in fact from starving tissues themselves. Since the new parts in regeneration are formed directly out of the old tissues, we may assume that the excessive capacity of assimilation of young parts is connected with their lack of differentiation and, therefore, lost when differentiation takes place and regained again when differentiation is lost. Regeneration exerts an effect which is in a degree malignant on animals as different medusæ and salamanders. The power of regeneration is only present to a limited extent in men and mammals, yet their general processes of growth are similar to those of lower animals.

DISCUSSION

DR. LEO LOEB, Philadelphia: The interesting experiments of Dr. Stockard demonstrate the dependence of the growth of one part of the body on the other parts. His results take perhaps a position midway between two other sets of experiments. About fifteen years ago Miss Bickford showed that during the process of regeneration new organs are formed in tubularia through direct transformation of one part of the body into a new organ. Morgan gave to this process the name "morphallaxis." Another process differing in some respects but still related has been described in fishes by Miescher. This author found that at certain times in the life of a fish the growth of the ovaries takes place at the expense of the muscle tissue, which latter is partly used up in the course of the process.

I am not certain that the cachexia which we find frequently during the growth of malignant tumors is due to similar conditions. I am inclined to believe that such cachexia is due to secondary processes of an entirely different character. As to the effect of calcium and potassium salts respectively on the growth of tissues I am inclined to regard the difference in the contents of calcium and potassium salts in necrotic and in growing tissues as a secondary condition, and not as a cause of tumor growth. We know that calcium is liable to be deposited in necrotic areas of various kinds and that on the other hand the protoplasm of cells contains relatively more potassium in contradistinction to the surrounding body fluids which usually contain more sodium. I am not certain that control tests have been published which would establish that growing tumors have a much larger content in potassium than other organs rich in cells and poor in connective tissue. In Dr. Stockard's experiments, potassium in the surrounding body fluid seems to be favorable to tissue growth. This condition is different from the one found in growing tumors in which the potassium has been found inside the cells.

A Study of Heredity with Reference to Susceptibility to an Inoculable Tumor of Japanese Waltzing Mice

DR. E. T. TYZZER, Boston: An adenocarcinoma occurring in a Japanese waltzing mouse was successfully transplanted to normal individuals of the same variety. It has now been propagated by inoculation from animal to animal for more than two years and its inoculation into waltzing mice has invariably yielded a high percentage of positive results. In most experiments, 100 per cent. of the waltzing mice inoculated developed tumors. The inoculation of tame white or colored mice has in all cases resulted negatively. In order to obtain data concerning the inheritance of the susceptibility to this inoculable tumor, a certain stock of common mice were bred with Japanese waltzing mice. In the first experiment, the offspring of common males and Japanese waltzing females were inoculated with the result that tumors developed in every instance. The offspring of Japanese waltzing males and common females were then tried and these also were found susceptible in every instance. In each experiment, comparative series of an equal number of common tame mice, of Japanese waltzing mice, and of their hybrid offspring were inoculated with the same tumor at the same time. The inoculation of common mice resulted negatively in all instances, while tumors developed in all the Japanese waltzing mice, and also in the first generation of hybrid offspring irrespective of whether they were derived from a common mother or from a Japanese waltzing mother. It was at this time observed, and has since been found true in all succeeding experiments, that the average rate of tumor growth is more rapid in the series of first generation hybrids than in comparative series of Japanese waltzing mice. If the rate of tumor growth is compared in individuals rather than in the entire series, exceptions to this general rule are not infrequent; that is, in certain Japanese waltzing mice the tumor may attain greater size in a given time than in certain individuals of a comparative series of first generation hybrids. On the basis of results such as these, it was thought at that time that the susceptibility to an inoculable tumor might possibly be inherited in accordance with Mendel's law. Susceptibility and non-susceptibility would then be considered "characters," and in this instance susceptibility would be a dominant character since it was manifested in all the hybrids of the first generation. In order to test this hypothesis, the first generation of hybrids were bred *inter se*, and in the series of experiments which followed, fifty mice of the second generation were inoculated. They invariably failed to develop tumors, while control series of both Japanese waltzing mice and first generation hybrids developed tumors in every instance. So far only three mice of the third generation have been inoculated, and these three gave negative results. Thus it is evident that neither susceptibility nor non-susceptibility to the inoculable tumor used are of themselves of the nature of Mendelian characters. It does not appear, however, that on these grounds the influence of heredity is to be disregarded, for there remains the distinct racial difference of common mice and Japanese waltzing mice in their susceptibility to the tumor used.

The Relationship of Spirochetes to Cancer Mice

DR. H. R. GAYLORD, Buffalo: This paper is a continuation of observations published in 1907 in *The Journal of Infectious Diseases*, on a spirochete in primary and transplanted carcinoma of the breast in mice. Continuation of the search for spirochetes in hardened sections stained by the Levaditi method, of primary mouse tumors, showed spirochetes present in large numbers at the margins of 40 primary tumors out of 48 examined. Of these 4 tumors were contaminated and were discarded, 4 were not contaminated and did not contain spirochetes, so far as the sections examined would indicate. Having determined the great frequency of these organisms in primary tumors, it became desirable to investigate the blood of mice suffering with tumors and also the blood of mice from various sources, to ascertain the relative frequency of spirochetes in the blood. By use of the Reichert dark-ground illuminating apparatus, it was found that a large number of mice with primary and transplanted tumors had spirochetes in the blood. Ten mice without cancer from a breeding establishment in Massachusetts where cancer is endemic, showed 7 positive, 3 negative; 15 mice from the District of Columbia examined on the same date showed 11 positive, 4 negative; 10 more from the same source gave 6 positive, 4 negative; 12 from Detroit, Mich., gave 9 positive and 3 negative; 5 mice reared in the laboratory, 2 positive, 3 negative. From these observations it will be seen that spirochetes can be found in the blood of apparently normal mice in about 70 per cent. of all cases investigated at a given time. Since the publication of my original paper I find that the mouse spirochete can be stained, although with difficulty, with the Giemsa stain, and with the aid of the dark-ground illuminating apparatus the presence of a flagellum can be occasionally demonstrated. Attempts to find spirochetes in the enclosed tumors of animals other than mice have been entirely without result. The entire absence of spirochetes in enclosed human cancer, in cancer in animals other than mice, and the occurrence of occasional strains of transplanted mouse cancer without the presence of spirochetes, are strongly opposed to any etiologic relation between spirochetes and cancer in general. The extreme

prevalence of spirochetes in mice is amply sufficient to explain the presence of spirochetes at the margins of primary cancer in these animals.

Primary Lymphosarcoma in Dogs Treated with Injections of Fluid Blood from Recovered Dogs

DR. H. R. GAYLORD, Buffalo: As further evidence of immunity in the blood of animals recovered from lymphosarcoma, as shown by the transfusion experiments of Crile and Beebe, I report three cases of lymphosarcoma, all in bull dogs, one bitch and two dogs, which were treated by injection of fluid blood from an immune dog furnished by Dr. Beebe. The blood was taken directly from an artery into a test tube containing Hirudin in salt solution which prevented coagulation of the blood, and the injection was made into the base of the tumors with the result that all tumors so treated retrograded and ultimately disappeared. All three dogs have remained free from tumors since the time of treatment to date, about four months. The apparent importance of preventing coagulation of the blood suggests the possibility that the leucocytes play an important rôle in the preservation of the immune characteristics of the blood of recovered animals, and suggests the desirability of isolating the leucocytes of immune animals, a series of experiments to this end having already been undertaken.

An Epidemic of Cancer of the Thyroid in Brook Trout in a Fish Hatchery

DR. H. R. GAYLORD, Buffalo: This is a preliminary report on the investigation of a fish hatchery, in which an epidemic of carcinoma of the thyroid in two-year-old brook and brown trout exists at the present time. In this hatchery, the water supply is from a spring coming out of a hillside, which runs into a basin or pond from which it is piped to a small reservoir and then through a series of tanks which draw their supply directly from the reservoir. Carcinoma of the thyroid was discovered in a fish in the basin on the hillside two years ago. One year ago, this basin was emptied and restocked with young fish and feeding was practiced for the first time in this upper pond. Of the tanks fed from the water passing through this pond, one tank containing 3,700 brook trout 2 years old, hatched from eggs brought from a hatchery in an adjoining state where the disease is not known to exist, showed 700 fish in various stages of the disease. The outbreak occurred in the early autumn and fresh cases are continually developing. In an adjoining tank, which has no connection whatsoever with the tank in question, are 200 brown trout reared from eggs hatched on the premises. Between 3 and 4 per cent. of these fish show disease. The infected fish at no time have come in direct contact with the fish in the upper pond where the disease is known to have existed; neither at any time have the brook trout and the brown trout been in contact with each other. I believe that the state of affairs found in this fish hatchery point very strongly to the infectious nature of this form of cancer and that the contagion is water-borne. It is possible that feeding liver into the waters of the fish hatchery has some relation to the outbreak in this case. I know of a second fish hatchery where the disease was endemic for a number of years, and where the feeding of liver has been changed to the feeding of chopped sea fish and in the last three years the disease has disappeared. I also know of two other fish hatcheries in which the disease is endemic, and I am undertaking a systematic and careful study of a number of fish hatcheries for the purpose of further determining the conditions under which the disease occurs.

DISCUSSION

DR. JAMES EWING, New York: Two years ago I received several fish which came from a hatchery, the location of which I do not know. Some of the tumors were large and microscopic sections showed them to be rapidly growing carcinoma of marked virulence.

DR. COLEY, New York: I sent Dr. Ewing the specimens of cancer in fish two years ago. They were obtained from a private hatchery in central Pennsylvania, at which time there were a considerable number of fish suffering from the same disease.

NEW YORK ACADEMY OF MEDICINE

SECTION ON SURGERY

Regular Meeting, held Jan. 8, 1909

DR. ELLSWORTH ELIOT in the Chair

Direct Blood Transfusion for Gastric Hemorrhage

DR. CHARLES H. PECK: This patient, a woman, was admitted to the hospital on July 1, after having had ten severe hemorrhages from the stomach in seven days. On account of her critical condition operation was deferred and the following day fresh bleeding occurred. Transfusion of blood was decided on, the woman's husband being the donor. The flow was maintained for thirty-five minutes with immediate improvement to the patient. Before the transfusion was begun the hemoglobin was 30 per cent., the red cells 999,000 and the blood pressure was 105; immediately after transfusion the hemoglobin was 60 per cent., the red cells numbered 2,400,000 and the blood pressure was 144. On July 7 her pallor increased and hemoglobin was again 30 per cent. and red cells 1,040,000 and gastroenterostomy was performed. There were no macroscopic evidences of ulcer and her convalescence was uneventful, the patient leaving the hospital twenty-four days after the gastroenterostomy. The case was interesting because of the direct benefit following the blood transfusion. I am unable to say just what part gastroenterostomy played in the recovery.

Sarcoma of the Calf of the Leg

DR. JOHN F. ERDMANN: The illness of this patient, a dentist, aged 22, began two years before he saw me. His right calf was swollen and larger than his left. The calf gradually increased in size, becoming hard and fixed. It was semi-fluctuant and the size of a cocoanut. The circumference was 19½ inches. I excised the tumor, taking away with it the gastrocnemius, together with all tissue that looked suspicious. The man made a perfect recovery; he has no difficulty in walking or standing and can raise the body while standing on the affected foot alone.

Direct Blood Transfusion with Description of a Simple Method

DR. JOHN A. HARTWELL: The improved method of end-to-end suture of the donor's artery and the recipient's vein, as practiced by Carrell, gives perfect results in animals, and has been used with success in the human subject. It is, however, a very difficult operation, and in the hands of many surgeons has failed because of the formation of a clot. Its success depends on the most rigid asepsis, and a careful attention to every detail. My experiences, as well as those of others, led me to devise some simpler and more certain method for the transfusion of blood. The radial artery of the donor is dissected out for a distance of two inches, or more if convenient, under cocain anesthesia. The small branches are isolated and tied, and a ligature thrown around the distal end, but not tied. The wound is covered with a moist, warm pad. An accessible vein in the forearm of the recipient, below the bend of the elbow, is exposed for the same length. If possible, a small tributary is dissected free for an inch at some point central to the proposed site of anastomosis. This is loosely clamped at its distal end. A ligature is then tied around the distal end of the main vein, and the vein divided just central to it. If needed, a light obstructing clamp is put on the vein higher up, but this is not always required. The adventitia is carefully stripped from the cut end of the vein, and three sutures of fine silk impregnated with petrolatum are passed through the media and intima on the cut circumference of the vein. The wound is then covered with a moist warm pad. The artery ligature is then tied, an obstructing clamp is gently placed on its exposed central part, and the artery is divided with sharp fine scissors just above the ligature. The adventitia is removed from the cut end, and then a small roll of it is slid upward along the artery for a distance of an inch or more, and left attached. Through this a silk ligature is passed, tied and cut about one-half of an inch long. The artery is then immersed in liquid petrolatum, and by means of a small forceps gently grasping it at about one inch from its cut end, is passed directly into the mouth of the vein, which

is held open with the three sutures. The arterial wall is sufficiently rigid to make this step easy. One, or if need be two, of the venous sutures are then clamped either to the suture in the adventitia, or to a radial branch, in order to prevent the separation of the two vessels, and the excess of venous circumference is clamped so as to hold the artery snugly, but not to constrict it. The obstructing clamps are then removed, and the flow proceeds. The dangers to the recipient attending the operation fall under four heads, viz., a hemolytic action of one blood on the other, the entrance of blood or air emboli into the circulation, the use of a donor who had some undemonstrable communicable blood disease, and overdistention of an enfeebled right heart. The following conclusions are offered: 1. The operation of direct blood transfusion as practiced with suture and canula shows a large percentage of unsatisfactory results. It requires special instruments and unusual skill for its successful execution. 2. The direct entrance of the artery into the vein has proved a simpler and more satisfactory method in a large series of experiments and in one clinical case. 3. At present we have no means of obtaining accurate knowledge of the quantity of blood entering the vein. The changes in hemoglobin, red cell count, pulse rate and blood pressure must all be given weight in estimating this quantity. Actual weighing of the donor may solve the problem. 4. The operation is not without danger from hemolysis, embolus or overdistention of the right heart, but with proper care these should be avoidable. All the animals used in the work were fully anesthetized with ether.

Plastic Surgery of Blood Vessels and Direct Transfusion of Blood

DR. ISAAC LEVIN: This late development of vascular surgery is due to the special difficulties encountered in dealing with this organ. Here, in addition to the usual aseptic precautions, the surgeon has to take into consideration the possibility of a secondary hemorrhage and the formation of thrombosis with subsequent arrest of the circulation and embolism in some vital organ. To implant an arterial segment successfully means to avoid the formation of an intravascular thrombus after operation. Blood remains fluid so long as it circulates in a vessel lined with unimpaired living endothelium. Should the endothelium be injured a thrombus must form. In the implantation of arterial segments of different animal species, and segments that have been kept for days in an ice box at a temperature of 0 and 1 C., the question presents itself whether these segments remain alive or whether it is possible to implant devitalized arterial segments. In collaboration with Dr. John Larkin, I performed a series of experiments with the transplantation of devitalized segments. The technic followed was that elaborated by Dr. Carrell. In the first series of experiments we transplanted into the abdominal aorta, in two dogs and two cats, segments of the abdominal aorta of the same species of animals placed for a few minutes in boiling water. In the second series, we transplanted into the abdominal aorta, in two dogs, segments of a human ureter procured at a fresh autopsy and hardened in 4 per cent. formalin. In both series the circulation in the femoral arteries ceased soon after the operation, paralysis of the lower extremities developed, and the animals died within twenty-four hours. The autopsies showed that the implanted segment had collapsed and presented a much smaller lumen than the abdominal aorta of the host. In a third series, we implanted in the abdominal aorta in two dogs and two cats segments of the abdominal aorta of the same species hardened in 4 per cent. formalin. The segments selected had the same lumen as the abdominal aorta of the host. The result in every experiment was the formation of thrombus, paralysis of the lower extremities and death within two or three days after the operation. We then selected segments with a wider lumen than the aorta of the host. One animal did well for ten days and then died. Both anastomoses held perfectly; the implanted piece was patent without any thrombi. A second animal also did well for ten days, but died under anesthesia given for the purpose of dressing the wound. These results seemed to show that for ten days the blood was passing through a dead canal and it remained fluid. It seems only necessary that the implanted tube have a very smooth surface, that its lumen correspond perfectly with the lumen of the rest of the blood vessels and the line of anastomosis be perfectly smooth and even. The temporary anastomosis required for the direct transfusion of blood is more readily and quickly accomplished with the aid of some mechanical appliance.

Clamp Designed for Direct Blood Transfusion

DR. ISAAC LEVIN: This clamp requires less complicated technic and less time for the performance of the operation than Crile's instrument does. The instrument is an artery clamp without the grooves. At the tip of each blade there is attached a small canula with a smooth bore, and at the inner edge of each canula are attached four small pin points and on the other surface of the canula four grooves are cut. When the clamp is closed the pins of one canula lie in the grooves of the other. At the beginning of operation the halves of the canula are separated; the vein is pushed through one canula and its wall is hooked on the pins. The same is done with the artery and the other half of the clamp. Then both halves are united and clamped. Both blood vessels are thus connected with the serous surfaces.

Discussion on Blood Vessel Surgery

DR. GEORGE E. BREWER: I have ideas similar to those of Dr. Hartwell, and have experimented with the result that I present two glass tubes that I have made. At each end there is a small nodule and a sulcus in which the vessel is to be tied. It is coated with a liquid paraffin. I have tried these tubes on animals with success; the operation is easy and the results marvellous. I have taken a dog; bled him until he was apparently dead, then transfused from another dog until the first one was resuscitated and the second nearly dead, repeating this many times. This is but a preliminary report of my work.

DR. GEORGE WOOLSEY: When I saw Dr. Crile perform the operation it looked easy, but I found that the technic was not so easy. The great improvement shown is in the time consumed in operating.

DR. C. CLARENCE SICHEL: I performed transfusion on a woman who had a profuse hemorrhage following delivery, the donor being the husband. The glass tube was used and a perfect recovery followed the operation.

DR. CHARLES H. PECK: I have used the canula for transfusion in three cases successfully.

DR. CLARENCE A. MCWILLIAMS: In four cases I have transfused with the Crile method, two being successful and two being failures. The failures were due to the fact that the radial arteries were small, the canulæ also were small, and when the vein was pulled through there was no lumen left. The Crile method was somewhat uncertain.

DR. CHARLES A. ELSBERG: I have devised a simplified transfusion canula which has proved successful in my hands.

Exarticulation of Shoulder for Carcinoma of the Humerus

DR. JOSEPH WIENER: A Russian, aged 56, had had endocarditis for several years. About a year and a half ago he sustained a fracture of the upper third of the humerus, which was followed by good union. About six months ago he began to have pain in the right arm, which steadily grew worse. During the past two months there was complete disability of the right arm. The whole upper extremity was seen to be atrophied from the disease. At the upper third of the humerus there was a bony tender swelling. A small hard nodule was noted in the median line of the prostate. There were no urinary symptoms. The fluoroscope showed the bone in the upper third of the humerus to be completely destroyed. Exarticulation at the shoulder was performed. The tumor involved the shaft of the humerus and had perforated into the muscles. A diagnosis of metastatic carcinoma possibly primary in the prostate was made.

Other Papers Read

"Fracture of the Os Magnum," by Dr. E. W. Peterson; "Foreign Body in the Intestines," by Dr. W. S. Schley; "Supracondyloid Fracture of the Left Humerus, with Malposition of the Fragments," by Dr. Joseph Wiener.

WESTERN SURGICAL AND GYNECOLOGICAL ASSOCIATION

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(*Concluded from page 322*)

Repair of the Internal Ring in Oblique Inguinal Hernia

DR. F. GREGORY CONNELL, Oshkosh, Wis.: The methods of radical cure of oblique inguinal hernia may be divided into two unequal divisions: 1. That in which the result is an anatomic reproduction of the normal relations. 2. That in which the resulting relations are markedly different from the normal. The various steps in the anatomic repair of oblique inguinal hernia consist of, (1) the removal of the sac, with redundant parietal peritoneum; (2) repair of the internal ring; (3) protection of the ring by suture of the internal oblique muscle to Poupart's ligament; (4) reunion of the aponeurosis of the external oblique muscle with the formation of a proper external ring.

Diagnosis and Treatment of Renal Calculi

DR. DANIEL N. EISENDRATH, Chicago: The number of cases in which calculi are found in both kidneys simultaneously is increasing. The chief points in the diagnosis, so far as symptoms are concerned, are hematuria, pain and passage of calculi. X-ray diagnosis is of value, and also a thorough knowledge, before operating, of the *x*-ray functional action of each kidney. The treatment is chiefly surgical. The operation of choice is nephrotomy and pyelotomy.

DISCUSSION

DR. W. D. HAINES, Cincinnati: The mistake of operating on one kidney without knowing the condition of the opposite one has been the undoing of several men. I do not wholly agree with Dr. Eisendrath that he would not operate for stone in case he could not find x-ray evidence of it. I removed a stone from the kidney year before last in the face of the disputing evidence of the *x*-ray. A very competent man made several exposures and could not find a stone; but the patient had the symptoms of continuous microscopic blood in the urine for quite a period of time; he had pus in the urine, and typical colic coming on at various times, and I thought that with these three symptoms, even though the *x*-ray did not show a shadow, I would be warranted in operating, and so in this instance did so, removing the stone. While I like the laboratory method of making a diagnosis, we must not get away from making it without the aid of the laboratory.

DR. M. L. HARRIS, Chicago: The clinical history of cases in which the stone is in the substance of the kidney is often obscure. I have just had such a case, and removed stones from a man who was sent to me with a diagnosis of chronic appendicitis, because of the indefiniteness of the symptoms and the fact that he had a little tenderness and more or less pain on the right side. In these cases, the pain is indefinite and more or less continuous, but is increased by violent exercise or labor. He was a laboring man and complained of backache. Continued microscopic examinations of the urine showed very few red blood cells, but they were practically constant. Considering the pain, the presence of blood cells in the urine, and a vague sense of discomfort in the lumbar region high up, some *x*-rays were made which showed that the cause of the discomfort was a calculus in the parenchyma of the kidney, not communicating at all with the pelvis. It was removed with gratifying result.

DR. B. B. DAVIS, Omaha: In the case of a woman, pregnant five months, on whom I operated with the idea of anchoring a movable right kidney, much to my surprise, I found a large stone, very rough and lobulated, in the pelvis of the kidney. This was removed, the kidney anchored at the same time, and the woman made a good recovery, went on to term, and was delivered safely at the end of nine months.

DR. W. W. GRANT, Denver: In a case of cystic adenoma in which I operated, the symptomatology simulated kidney stone; I removed the kidney. It has been nearly two years since the operation, and the patient, a woman, has been perfectly well.

Removal of the Gall Bladder

DR. ARCHIBALD MACLAREN and DR. H. P. RITCHIE, St. Paul: Cholecystectomy was performed twenty-one times in 165 operations on the gall bladder, liver and pancreas. Pain is the most constant symptom and was definitely localized in the gall bladder in all cases, except two, in which the symptoms were ascribed to other abdominal conditions. Inflammatory history was obtained in fourteen cases. The occurrence may have been remote, recent, or immediate. Tumor was found in seven cases. Ages of patients ranged from 25 to 74 years. There were four cases in males and seventeen in females. The gall bladder was without stones in four cases. In six histories there was evidence of jaundice, in three of these cases there was a stone in the common duct, and in the other three a stone was found in the cystic duct. Three cases showed perforation of the gall bladder. In two cases the gall bladder was removed at a second operation. The cystic duct was tied nine times, and drained with tube nine times. Once the forceps was left *in situ*. The reasons for removal of the gall bladder were: Contracted and useless gall bladders in ten cases, dilated and hypertrophied in six cases, phlegmonous and gangrenous gall bladders, one case, empyema two cases, mucous fistula two cases. Results: three deaths have occurred—14.2 per cent. mortality. The gall bladder was removed in three cases in which the common duct was involved. We believe in leaving the gall bladder in common duct cases for the purpose of cholecystenterostomy if it could be so used when needed. Both drainage and ligation of the cystic duct are proper procedures and depend on the individual case.

The greatest interest in the pathology of the gall bladder is centered in the gross changes. Each specimen should be studied for malignancy, but usually ends in demonstrating different degrees of changes resulting from infection or circulatory interference. No specimen of our series was removed until it was definitely shown that the organ was irreparably damaged. It is difficult to lay down rules for the removal of the gall bladder. The fear of a second operation has been the cause of the excision of organs which might have been saved. In nine cases contracted and cystic gall bladder empyema from typhoid fever and other conditions were left and the patients remained well from varying periods up to nine years. Often after drainage bile will not commence to flow until the fourth or even up to the seventh day. There are many cases in which the gall bladder is so definitely diseased that there would be no question as to the necessity of removal. Those cases in which it is difficult to decide are cases of cystic gall bladders in which the stone has been impacted a short time, or those which present small hemorrhagic spots, or moderate-sized perforations. And we believe with Deaver that in case of doubt we should drain. Pancreatic disease occurs frequently in gall-bladder diseases and drainage is necessary for cure. The fact must not be overlooked when the question of cholecystectomy is to be considered. Cholecystectomy is influenced by the surgeon's own experience, and we must not look at the records of others and tell patients that the mortality from this operation has been reduced to 2 or 3 per cent., forgetting that the man whom we are unconsciously quoting has only attained his 3 or 4 per cent. by a greater experience than our own, and no doubt through bitter trials and losses.

New Incision to Reach the Bile Tracts

DR. CLIFFORD U. COLLINS, Peoria, Ill.: This incision through which to reach the bile tracts begins at the inner edge of the right rectus muscle within two inches of the ensiform cartilage, and extends diagonally downward and outward through the skin, fat and anterior wall of the sheath. The rectus muscle is separated from its sheath and retracted outward. The same diagonal incision is then made through the posterior wall of the sheath and peritoneum. A short transverse incision from the upper end through the linea alba, and another from the lower end through the linea semilunaris complete it. The advantages are: 1. There is not a continuous opening down through the layers of the abdominal wall. The opening through the aponeurotic structures are protected by the

uninjured muscle, which lies between them. 2. The intercostal nerves are not injured as they enter the muscle through its outer border. 3. It makes a stronger closure when drainage is required. The tube or gauze holds the rectus muscle to the outer side. When it is removed, the muscle slides over to its former bed and places a barrier of uninjured muscle across the drainage tract. 4. No injury is done to the muscular structure. An instrument to facilitate the removal of stones from the first portion of the common duct consists of forceps with an incomplete ring at the end of each jaw covered with rubber tubing. If the stone is found in the first portion of the comon duct, or can be pushed up into the first portion, the lower jaw of the forceps is passed into the foramen of Winslow below the stone. When the jaws are closed, the incomplete rings will surround the stone and it may be drawn up into the incision.

Pericolitis

DR. JABEZ N. JACKSON, Kansas City, Mo.: Pericolitis has been said to be due to adhesions about the colon, mostly of unknown origin. I believe that there is a form with a distinct pathologic identity, and characterized by a distinct clinical picture, and for which an operation is suggested. Thus far my experience is limited to five experiences of rather recent date, and while therefore not conclusive, has been sufficiently satisfactory to warrant hope in its future. This pericolitis is characterized by the formation of an apparently entirely new layer of distinctly vascularized peritoneum in which the vessels are parallel and appear to begin on the outer side at the root of the mesocolon, whence they advance on to the colon and then generally pass in the direction parallel to the long axis of the ascending colon. This membrane serves to bind the ascending colon close to the posterior abdominal wall, and the longitudinal strands tend to produce a shortening and often a marked angulation of the colon. Sometimes this membrane passes across the ascending colon and up on to the transverse colon, which is then drawn downward and to the right until the transverse colon parallels the ascending colon and a distinct angulation is produced at the hepatic flexure above and below where the transverse colon turns back. With this latter condition the stomach is always drawn down and a mechanical gastroptosis is produced. The general effect of this membrane is a mechanical interference with the free peristalsis of the colon, also the stomach, thus producing stagnation, distention, pain, flatulency and a train of nervous symptoms distinctly neurasthenic in character. This condition is believed to be of very frequent occurrence, and must have been observed by all surgeons of experience, but thus far has not been adequately described. I have found that this membrane can be dissected off *in toto*, and when this is done the mobility of the colon is restored.

Gastric and Duodenal Ulcer

DR. W. D. HAINES, Cincinnati, Ohio: From 1 to 4 per cent. of all cases in which autopsy was performed in Europe and the United States exhibited ulcer evidence ranging from active ulcer to carcinoma. Lymph anastomosis may be traced from the stomach until the flow is emptied into the general circulation. The gland-bearing tissue between the lesser curvature of the stomach and the pancreatico-splenic group of glands should be removed in operating for cancer of the pylorus. By pushing an instrument through the crater of the ulcer-producing artificial perforation, ligating the surrounding varicose vessels and turning in the margin of the ulcer by two layers of serous sutures, local rest is obtained for the inflamed indurated tissues, and a gastrojejunostomy completes the technic. Nearly all gastric cancers have their origin in chronic ulcer. I recommend excision of the ulcer-bearing area after the method of Rodman, when practical, as the best method of dealing with chronic ulcer.

Mistakes in Diagnosis in the Upper Abdomen

DR. JAMES E. MOORE, Minneapolis: I make no effort to elucidate obscure or moot points in diagnosis, but endeavor to point out some common errors that can and should be avoided. The principal reasons for mistakes in diagnosis in all regions of the body is lack of careful and systematic examination, and the two special reasons for mistakes in the upper abdomen are difficulty in palpation and the comparatively recent origin of upper abdominal surgery. I cite a case in which two operations had been done, one for appendicitis, and one for gallstones, and in which the whole trouble was due to splanchnoptosis. I desire also to direct attention to the dangers of a false history given by a neurasthenic patient, especially every female patient, coming for examination for conditions in the upper abdomen accompanied by abdominal crises, should be carefully examined with a view of establishing the presence or absence of splanchnoptosis because of the dangers of mistaking crises due to ptosis of organs, for gallstones and for other conditions. It is not safe to conclude in the presence of splanchnoptosis that the patient is not suffering from other pathologic conditions, because they are often combined. The evidences of ptosis of the various organs are so plain that they should always be discovered when proper examination is made. The liver is more frequently misplaced and misshapen than is generally understood, and is liable to give rise to mistaken diagnoses. There is danger of overlooking pathologic conditions amenable to surgical treatment in neurasthenic patients. Pott's disease in its early stages, when located in the middle or upper dorsal region, causes pain that has frequently been the cause of mistaken diagnoses. This mistake can usually be avoided by ascertaining the presence or absence of the spine.

Surgical Types of Abdominal Tuberculosis

DR. WILLIAM L. HAGGARD, Nashville: After the lungs and bones, the intestines, pelvic organs and peritoneum are the strongholds of tuberculosis. The duodenum and esophagus seem practically immune, due to the rapid passage of the contents of these tubes which allows no opportunity for microbial fixation. The stomach immunity seems to be due to the destructive action of the gastric juice on the tubercle bacilli. There are nine instances of primary tuberculosis in the literature and fifty-seven cases of secondary involvement of the stomach. The small intestines are usually involved secondarily, but primarily oftener than was formerly believed. About 25 per cent. of tuberculosis is said to gain entrance into the system through the intestinal mucosa. It is a disorder of child life, due most probably to infected cow's milk. Intermittent pain and diarrhea are the chief symptoms; strictures and peritonitis are the principal sequelæ. Nearly half of the cases of intestinal stenosis are caused by tuberculosis. Eighty-five per cent. of abdominal tuberculosis occurs in the ileocecal region. Swallowed bacilli are causative. Chronic obstruction sometimes results. Chronic peritonitis with ascites is usually tubercular. Abdominal tuberculosis occurs in females in proportion of 4 to 1. The Fallopian tubes account for this greater prevalence. Patients failing to improve under treatment should have an exploratory laparotomy. Simple laparotomy cured only those cases of the ascitic variety in which the tube becomes adherent, and the tubercular process thus becomes obliterated. Recurrent cases require removal of the focus of disease in the tubes for permanent cure. The ulcerative and fibrous type are unsuited to operation. The suppurative form is usually fatal in spite of operation. Aside from sacculated peritonitis the most constant tumor is the thickened, sausage-shaped omentum lying transversely above the umbilicus. Diagnostic tuberculin was found to give positive results in the majority of cases. Only a third of the medical cures were permanent. Operation gives 85 per cent. of cures. Advanced visceral tuberculosis contraindicates operation. Abdominal operation should include examination of the cecal region, and the pelvis, with removal of all foci without drainage. The operative mortality is not over 3 per cent. I observed postoperative tuberculous wound infection in three cases. Fresh air, sunshine, rest, nourishment, and the tuberculin bacillary emulsion are important.

Peritoneal Adhesions

DR. A. W. ABBOTT, Minneapolis: The cause of peritoneal adhesions is often questionable. Rough handling, hemorrhage and traumatism are given more credit than they should re-

ceive. The relation between adhesions and symptoms is very contradictory. Extensive adhesions often are not accompanied by symptoms; and, *vice versa*, severe symptoms are accompanied by very few adhesions.

The Versatile Omentum

DR. FREDERICK A. DUNSMOOR, Minneapolis: I use the omentum as a patch for wounded intestine, denuded peritoneum, or to fill in ulcerations which are not readily or safely closed. When large pus cavities are opened, after removing the pus and wiping contaminated parts with iodoform gauze, the omentum is in all cases, where possible, made to adhere to the infected part instead of using a drainage tube. 1. It seems sensible to follow natural and physiologic efforts in attempts to cure. 2. The functions of the omentum to combat infection and drain dangerous elements from the peritoneal cavity are well established. 3. We should aim to secure the assistance of such functions, and at the same time use ingenuity to prevent permanent adhesions which might be harmful. 4. We should deprecate the wasteful amputation of parts of the omentum appearing redundant or occupying the hernial sac. 5. Damaged over-affected or strangulated portions of the omentum should be removed, in order that greater utility may be possible from the remainder.

Colles' Fracture

DR. J. W. ANDREWS, Mankato, Minn.: Diagnosis can be made by inspection. Crepitus and increased mobility are rarely present. An anesthetic is necessary for complete reduction, if not for accurate diagnosis. The injuries sustained by the soft tissues are extensive and important. In this form of fracture rapid bony union is the invariable rule. The prevention of deformity is not always possible.

The Cancer Question

DR. J. E. SUMMERS, Omaha: Cancer deserves equally as much attention by the laity as does tuberculosis. More women die of cancer than of tuberculosis. In a better education of the public lies the hope of the prevention of cancer. In its early recognition lies the promise of cure.

Other Papers Read

The following papers were also read: "Splenic Anemia," by Dr. Van Buren Knott, Sioux City, Iowa; "Abdominal Tuberculosis," by Dr. W. D. Haggard, Nashville; "The Surgeon and His Ideals," by Dr. W. E. Rochford, Minneapolis; "Diagnosis and Treatment of Cancer of the Uterus," by Dr. George C. Barton, Minneapolis; "Abdominal Pregnancy; Report of a Case, with Operation and Delivery of the Living Child," by Dr. J. N. Warren, Sioux City, Iowa; "Treatment of Retrodisplacements of the Uterus," by Dr. A. C. Stewart, Duluth, Minn.; "Technic of Cleft Palate Operations," by Dr. J. R. Eastman, Indianapolis; "Accidents and Complications in Goiter Operations," by Dr. Charles H. Mayo, Rochester, Minn.; "Plastic Surgery of the Abdominal Wall," by Dr. R. C. Coffey, Portland, Ore.

Medicolegal

Important New Ruling on Waiver of Privilege by Plaintiff in Malpractice Case

The Court of Appeals of New York says that the case of Capron vs. Douglass was to recover damages against the defendant, a physician and surgeon, for malpractice in treating a fracture of the tibia and fibula of the plaintiff's leg. On the trial evidence by the plaintiff and his witnesses tended to show that the defendant was called as a surgeon to attend the fracture, and that he was negligent in reducing the fracture and in his subsequent care of the patient. After several weeks it was discovered that there had been no union, and the plaintiff was then removed to a hospital, where an operation was performed by a Dr. G., aided by a Dr. D., one of the hospital's staff of surgeons, after which there was a union of the fractured bones and recovery, but with the usefulness of the leg somewhat impaired.

The contention of the defendant was to the effect that he had properly reduced the fracture, placing the broken bones in apposition, but that he was disappointed in their failure to unite, and that the cause of such failure was one that could not be determined by an external examination of the limb, and was only discovered after the plaintiff had been removed to the hospital and an incision made at the place of the fracture, when it was discovered that some of the muscles of the leg had intervened between the broken ends of the bones, preventing their coming together and forming a union. This condition of the fractured bones was discovered by Dr. G. at the hospital, who performed the operation, and was testified to by him as a witness for the defendant, without objection by the plaintiff. The defendant then called as a witness Dr. D., who assisted Dr. G. in the operation, but his evidence was excluded on the objection of the plaintiff's counsel, under the provisions of Section 834 of the New York Code of Civ.. Procedure.

Section 834 provides: "A person duly authorized to practice physic surgery, . . . shall not be allowed to disclose any information which he acquired in attending a patient, in a professional capacity, and which was necessary to enable him to act in that capacity." Section 836 provides that the provisions of the section apply to a surgeon, "unless the provisions thereof are expressly waived on the trial or examination by the person confessing, the patient or client. . . . The waivers herein provided for must be made in open court, on the trial of the action, or proceeding, and a paper executed by a party prior to the trial, providing for such a waiver shall be insufficient as such a waiver."

There could be no question with reference to the discovery made by Dr. G. and Dr. D., in their operation on the plaintiff at the hospital, coming within the express language of the provisions of Section 834 of the Code, and the testimony, therefore, under ordinary circumstances would be privileged. But the question here presented was as to whether such privilege had been waived by the plaintiff on the trial. He and his counsel sat by, and permitted the testimony of Dr. G. to be given without interposing any objection thereto, thereby waiving the privilege which the plaintiff might have availed himself of had he seen fit. He had thus permitted the condition of his broken limb to be given to the public in an open trial, thereby forever preventing it and its condition from being a secret between himself and his physician.

The intent of the legislature in enacting the statute making such information privileged was, doubtless, to inspire confidence between the patient and his physician, so that the former could fully disclose to the latter all the particulars of his ailment without fear that he might be exposed to civil or criminal prosecution, or shame and disgrace, by the disclosure thus made, and thus enable the latter to prescribe for and advise the former most advantageously.

It would seem that under certain authorities the plaintiff, by admitting the evidence of Dr. G. to be given with reference to the discovery made at the operation, thereby also must be deemed to have waived the privilege as to Dr. D., who was there assisting Dr. G. in the operation. But the court prefers to place its decision in this case on broader grounds.

This action, as we have seen, was for malpractice. The plaintiff, both in his complaint and in his testimony, fully disclosed all of the details of his affliction as it existed both at his home and at the hospital. He gave in much detail how the fractures occurred, how they were treated, his pain and suffering, and so far as he was able to comprehend, when not under the influence of anesthetics, the particulars of the operation at the hospital. He himself had therefore given to the public the full details of his case, thereby disclosing the secrets which the statute was designed to protect, thus removing it from the operation of the statute. In other words, he had waived in open court on the trial all information which he might have kept secret, by disclosing it himself.

The character of the action necessarily called for a disclosure of his condition and the treatment that was adopted by the defendant and those assisting him. To hold that the plaintiff might waive the privilege as to himself and his own

physicians, and then invoke it as to the defendant and his physicians, would have the effect of converting the statute into both a sword and a shield. It would permit him to prosecute with the sword, and then shield himself from the defense by the exclusion of the defendant's testimony. It would enable the plaintiff to testify to whatever he pleased with reference to his condition and the treatment adopted by the defendant, without fear of contradiction. The plaintiff could thus establish his cause of action, and the defendant would be deprived of the power to interpose his defense by reason of the closing of the mouth of his witnesses by the provisions of the Code referred to. Such a construction of its provisions the court thinks was never contemplated by the legislature. It would lead to unreasonable and unjust results. Instead thereof, the court prefers a construction of the provisions of the Code to the effect that when the privilege of the plaintiff has been once waived by him in court, either by his own testimony or by that of others given with his knowledge and consent, and his physical condition has been given to the public, the door is then thrown open for his opponent to give the facts as he understands them. This, to the court's mind, affords a more just and equitable rule, and is the one that was evidently contemplated by the legislature.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Boston Medical and Surgical Journal

January 14

1 *Football Injuries of the Harvard Squad for Three Years Under Revised Rules. E. H. Nichols and F. L. Richardson, Boston.
2 *Typhoid Carriers Found in a Series of Typhoid Fever Patients at the Time of Their Discharge from the Boston City Hospital. W. T. Graham, C. L. and J. E. Overlander and M. A. Dailey, Boston.
3 Reminiscences of America. M. Boehm, Berlin.
4 Epidemic of Dengue in the Philippine Islands. H. W. Jones, U. S. Army.
5 How May the Medical and Scientific Spirit Best be Promoted in Our Institutions? C. A. Drew, Bridgewater, Mass.

1. **Football Injuries.**—Nichols and Richardson analyze the injuries received by the Harvard football squad during the season of 1905, under the old rules, and the seasons of 1906, 1907 and 1908 under the revised rules. They conclude that not only has the number of injuries been markedly diminished, but there has been a diminution in the average of severity, and the character of the game has been changed for the better, not only from the point of view of the player and the spectator, but also from that of the surgeon.

2. **Typhoid Carriers.**—As the result of careful experiments at the Boston City Hospital, Graham, C. L. and J. E. Overlander and Dailey found 23 per cent. of a series of 65 typhoid patients showing typhoid bacilli in the stools and urine for ten days before their discharge. The authors urge that the stools and urine of all typhoid patients be examined for typhoid bacili during the last ten days preceding their discharge from medical care, and those patients with positive stools or urine should be detained. If at the end of ten weeks bacili are still present, the patients should remain under the supervision of the Board of Health wherever they may go, until they cease to be carriers.

Medical Record, New York

January 16

6 Darwinism and Malaria. R. G. Eccles, Brooklyn.
7 Vaccine Treatment of Typhoid. W. H. Watters and C. A. Eaton, Boston.
8 Practical Value of Tincture of Iodin and Iodin Catgut in Major Surgery. W. T. Dannreuther, New York.
9 *The Immediate Versus the Deferred Operation for Extrauterine Pregnancy. A. Sturmdorf, New York.
10 A Cyst of the Prostatic Vesicle. N. A. Mikhailoff, St. Petersburg, Russia.
11 Early Recognition of Esophageal Stricture. S. Lange, Cincinnati.

9. **Operation for Extrauterine Pregnancy.**—Sturmdorf argues against the deferred operation for ruptured tubal pregnancy. He refers to the theory that not abdominal hemorrhage, but operative shock added to the shock incidental to the rupture of the tube, is the cause of the mortality. He cites three factors brought forward in support of this contention: 1. Active bleeding from the ruptured vessel is not observed during operation; 2, the amount of blood lost is never lethal, according to physiologic laws; 3, pregnant bitches with severed arteries never bleed to death. He states that he knows of no operation for shock and that if shock and not the loss of blood is the cause of death, then any operation, immediate or deferred, is contraindicated. In answer to the first point he states that the absence of visible spurting from the ruptured artery is due to a natural series of events. A hemorrhage occurs, severe enough to produce syncope, that means cerebral anemia, which results in a diminution of frequency and force of the cardiac systole and prolongation of its diastole; as a consequence there is a slowed blood current which favors clotting. This is Nature's remedy for grave hemorrhage. The abdomen is opened, and the intra-abdominal pressure is found to be increased in proportion to the amount of the extravasation; the incision converts this hypertension into a hypotension, as a result of which the large abdominal veins dilate at the expense of the arterial contents. The uterus or tubes being drawn into the incision are angulated, thus obstructing the circulation through the ovarian arteries. And yet we find those who are surprised at the absence of spurting. Dogs can not bleed to death from severance of ovarian arteries. Even the carotid may be severed in a dog without fatal results, owing to the excessive development of the elastic tunic in canine blood vessels. Nevertheless, while dogs do not bleed to death from rupture of their arteries, women do—as witness the fatal results following the accidental slipping of ligatures from tied ovarian arteries after operations for other pelvic conditions.

The studies of Crile and others show conclusively that an absolute differentiation between shock and concealed hemorrhage is clinically impossible. Nor can a hemoglobin estimation, as recently advocated, aid in this differentiation. The immediate result of hemorrhage on the blood is quantitative and not qualitative, consequently the last drops must show the same hemoglobin content. We bleed our blood as a whole and not our hemoglobin only. Every active therapeutic effort must be directed against the etiologic factor. This etiologic factor is the ectopic pregnancy—remove it. The contributory and fatal factor is the ruptured vessel; seal it by the only measures known to surgery—prompt ligation. In short, says Sturmdorf, let us leave dogs and theories aside and operate promptly in ectopic gestation.

New York Medical Journal

January 16

12 *The Rôle of the Bureau of Health in Public Vaccination. A. C. Abbott, Philadelphia.
13 *Smallpox Before and Since the Discovery of Vaccination. J. F. Schamberg, Philadelphia.
14 *The "So-called" Dangers of Vaccination. W. N. Welch, Philadelphia.
15 *Legal Aspects of Vaccination. H. L. Carson, Philadelphia.
16 James Blake. J. W. Wainwright, New York.
17 Treatment of Neurasthenia by Static Electricity. J. H. Branth, New York.
18 Further Report on the Jungle Plant (Combretum Sundiacum) in Morphin Addiction. W. D. Silkworth, New York.
19 *The Sexual Factor in Tuberculosis. W. H. Peters, Providence, R. I.

12 to 15. Abstracted in THE JOURNAL, Jan. 2, 1909, pp. 69, 70.

19. **The Sexual Factor in Tuberculosis.**—In this article Peters refers to a former article (THE JOURNAL, March 21, 1908) and summarizes the opinions of men experienced in the treatment of this disease, to whom he had addressed a letter requesting their views on the management of the sexual factor, its relation to the home treatment, and their opinion as to abnormal sexual desire in the consumptive adult. The consensus of opinion from the men interviewed shows that the majority were of the opinion that increased sexual desire is not a condition due to the toxins generated in the tuberculous; that such a desire is due chiefly to idleness, and that occupation on the part of the consumptive is a necessary adjunct to the treatment. Sexual indulgence, however, is a serious bar to the home treatment; married patients gain faster in sanatoria.

Lancet-Clinic, Cincinnati

December 9

20 Points in the Use of Massage and Passive and Active Mobilization in Treatment of Traumatic Joint Affections. H. A. Oldenborg, Chicago.
21 Antepartum Hour-Glass Contraction of the Uterus. S. C. Carson, Greensboro, Ala.
22 Odontomata. B. M. Ricketts, Cincinnati.

Medical Fortnightly, St. Louis

January 11

23 Touring the Lands Where Medical Science Evolved. R. G. Eccles, Brooklyn.
24 Education and Organization in the War on Tuberculosis. G. Homan, St. Louis.

Virginia Medical Semi-Monthly, Richmond

January 8

25 Surgical Tuberculosis with Special Reference to Tuberculin in Diagnosis and Treatment. R. T. Taylor, Baltimore.
26 Diagnosis and Treatment of Tuberculosis of the Testicle. W. L. Peple, Richmond, Va.
27 Diagnosis and Treatment of Pneumonia. J. H. Dunkley, Saltville, Va.
28 Diagnosis, Treatment and Prognosis of Pneumonia. T. J. Hughes, Saltville, Va.
29 Carcinoma of the Breast. H. M. Taylor, Richmond, Va.
30 Frequency of the Absence of Skin Lesions in Syphilis. E. D. Starke, Norfolk.
31 New Standards in Medical Education, and Some of Their Results. R. H. Whitehead, Charlottesville, Va.
32 *Existing Relations Between the General Practitioner and the Specialist. J. W. Bovee, Washington, D. C.

32. Abstracted in THE JOURNAL, Nov. 7, 1908, p. 1624.

Journal of the Michigan State Medical Society, Detroit

December

33 Infective Possibilities of Cow's Milk. C. H. Johnston, Grand Rapids.
34 Diet in Gynecology. J. H. Kellogg, Battle Creek.
35 Neglected Fields in Medicine. W. S. Anderson, Detroit.
36 Nostrums and Proprietary Preparations. W. T. Dodge, Big Rapids.
37 Perplexing Points in Serum Therapy. M. P. Kemp, Detroit.
38 Technic of Suprapubic Prostatectomy. G. H. Palmerlee, Detroit.

International Clinics, Philadelphia

Vol. IV, Eighteenth Series

39 Advance of Physical Therapeutics. J. H. Pratt, Boston.
40 Treatment of Gastric Ulcer Based on the Results of One Hundred and Forty Cases. J. A. Lichty, Pittsburg.
41 Psychotherapeutics, with Special Reference to the Influence of the Mind on the Body. C. D. Palmer, Cincinnati, Ohio.
42 Treatment of Gout. J. W. Wainwright, New York.
43 Splanchnoptosis—Enteroptosis—Glénard's Disease. T. R. Brown, Baltimore.
44 Primary Splenomegaly (Splenic Anemia). E. P. Weber, London.
45 Gangrenous Appendicitis, with Spontaneous Cure Due to Discharge Through Intestine. A. L. Benedict, Buffalo.
46 Acute Dilatation of the Stomach. A. G. Nicholls, Montreal.
47 Fractures of the Skull. G. T. Vaughan, Washington, D. C.
48 Traumatic Lesions of the Semilunar Cartilages of the Knee-Joint. A. N. McGregor, Glasgow, Scotland.
49 Pneumonia Complicated by Pneumococcic Arthritis. A. Hand and J. H. Jopson, Philadelphia.
50 Personal Observations on Bier's Hyperemia. G. W. Ely, Pittsburg, Pa.
51 Paronychia Lateralis. C. G. Cumston, Boston, Mass.
52 Buried Catgut and a Subcuticular Stitch in Plastic Operations on the Perineum. B. M. Anspach, Philadelphia.
53 Series of Malignant Ovarian Neoplasms. F. G. Bushnell, Brighton, Eng., and M. P. Kerrawalla, London, Eng.
54 Work on the Gynecologic Ward of the Western General Hospital, Montreal. A. L. Smith, Montreal.
55 New Form of Scoliometer. H. Hudson, Philadelphia, Pa.
56 Rôle of Insects in the Transmission of Disease. M. A. Brown, Cincinnati, Ohio.
57 Pseudobulbar Palsy. J. H. Lloyd, Philadelphia.
58 Neurasthenic Syndrome. D. J. McCarthy, Philadelphia.
59 Relation which Hypertrophy of the Various Tonsils of Waldeyer's Ring Bears to the Etiology of Disease. R. B. Scarlett, Philadelphia.
60 Symptomatology of Anterior Poliomyelitis. J. H. McKee, Philadelphia.
61 Serotherapy Treatment of Epidemic Cerebrospinal Meningitis. C. H. Dunn, Boston.
62 Etiology and Treatment of Pernicious Malaria. W. H. Deaderick, Marianna, Ark.
63 Bronchial Calculi. C. B. Farr, Philadelphia.

Denver Medical Times and Utah Medical Journal

December

64 Criticism of Modern Training School Methods from the Standpoint of the Surgeon. H. G. Wetherill, Denver, Colo.
65 The Three Graces. C. B. Dyde, Greeley, Colo.
66 Phases of Medical Economics. G. E. Neuhaus, Denver.
67 The Doctor in Politics. W. J. Fairfield, Delta, Colo.
68 Surgical Comments. C. E. Tennant, Denver.
69 National Department of Public Health as a Factor and Incentive to State and Local Efforts. W. T. Hasler, Lehi, Utah.
70 Scleroderma, Gangrene of Lung and Removal. A. J. Hosmer, Salt Lake City.
71 Oral Sepsis or Unclean Mouth as Cause of Disease. N. H. Packard, Springville, Utah.

Western Medical Review, Omaha, Neb.

December

72 Serodiagnosis of Syphilis. A. Schalek, Omaha, Neb.
73 *Artificial Obstetrical Dilatation of the Cervix Uteri. A. B. Somers, Omaha, Neb.
74 Some Difficult Complicated Confinement Cases (concluded). J. R. Gilbert, Morrill, Neb.
75 Correction of Septal Deformities. H. L. Burrel, Omaha, Neb.

73. **Dilatation of Cervix.**—Somers says that the methods of dilatation that most nearly imitate natural processes are to be preferred. The method that induces or accelerates labor should be chosen, rather than a method of forcible dilatation, for the purposes of delivery without producing labor. The earliest stages of dilatation can be best accomplished by bladed steel dilators. The next degree of dilatation can best be accomplished by hydrostatic bags. The final degree of dilatation may be safely accomplished in selected cases by manual methods. Rapid forcible dilatation by any and all methods is to be condemned, except in case of emergency with the most urgent indications, and should be ranked with Cesarean section as a major operation. Cervical incisions should be resorted to only when the supravaginal cervix is fully dilated and then only by experienced operators.

Journal of Abnormal Psychology, Boston

October-November

76 Psychologic Factors in Dementia Præcox—An Analysis. A. A. Brill, New York.
77 *My Life as a Dissociated Personality. B. C. A.
78 *The Unconscious. M. Prince, Boston.

77. **Dissociated Personality.**—This is an account, by the subject herself, of her experiences as a multiple personality. She shows considerable intellectual power coupled with training in psychology, which makes her introspective observations valuable.

78. **The Unconscious.**—Prince discusses conscious and unconscious memory, the formation of complexes, the formation of complexes in hypnotic and other associated conditions of the personal consciousness, the composition of dormant complexes, the conservation of complexes, and the formation to a great extent of the dormant consciousness from the sifted experience of ourselves and our predecessors.

Vermont Medical Monthly, Burlington

December

79 *Specialism in Medicine. G. H. Gorham, Bellows Falls.
80 *Puerperal Eclampsia. W. N. Bryant, Ludlow.
81 *Furo Scribendi* or *Furo Loquenda* (*sic*). W. A. Lyman, Burlington.
82 Extrauterine Pregnancy. W. J. Aldrich, St. Johnsbury.

79. **Specialism.**—Gorham says that it is rare for a man to become a successful specialist unless he is first a successful general practitioner. He sketches an advanced course of three years study in a specialty, to be taken after the conclusion of ten years in general practice, and suggests that this course should lead to a higher degree. We do not need more specialists, but more men thoroughly trained in some special line of medical work. He particularly criticizes the pseudospecialists with whom the country is studded and pleads for a more intimate relation between the general practitioner and the specialist.

80. **Puerperal Eclampsia.**—Bryant discusses the subject in general and concludes that the total output of urinary solids in the twenty-four hours is of much greater significance than the presence or absence of albumin in the urine. In the treatment of the eclamptic state, veratrum viride, in suitable cases, given hypodermically to effect in heroic doses, has the endorsement of practical men and the prestige of eminent authority, and deserves high rank as a remedy in this disease.

Wisconsin Medical Journal, Milwaukee

December

83 *Causal Factors in the Production of Monsters. C. R. Bardeen, Madison.
84 Diagnosis and Treatment of Hip-Joint Disease. V. F. Marshall, Appleton.
85 Use of Trichloracetic Acid. M. Iverson, Stoughton.

83. **Monsters.**—Bardeen discusses the development of the embryo, and considers faulty implantation of the ovum most frequently the cause of abnormal development and arrest of development of the human ovum. He refers to experimental

data as showing how readily monsters may be formed by mechanical or chemical means in the lower forms of life. The results of tubal pregnancy show how frequently pathologic embryos or monsters may be produced by an unfavorable environment acting on the human ovum. There is no evidence, he asserts, that maternal impressions have anything to do with the production of monsters.

Journal Oklahoma State Medical Association, Guthrie

December

86 Gangrenous Inflammation of the Cecum. V. Berry, Wetumka.
87 Sanitary Problems of the Canal Zone—How We Are Solving Them—Organization and Methods. W. C. Gorgas, U. S. Army.
88 State Medicine and Allied Sciences, with Suggestions for Sanitary and Social Legislation. J. M. McComas, Elk City.
89 Tumor Pathology. J. D. Hughes, Shawnee.
90 Opsonic Index and Bacterial Vaccines. W. W. Rucks, Guthrie.
91 Tuberculin and Tuberculin Therapy. L. M. Warfield, St. Louis.

Pennsylvania Medical Journal, Athens

December

92 *Opportunities of the Medical Profession in the Far East. T. G. Simonton, Pittsburg.
93 *Diseases of the Ear from a Medical Standpoint. W. H. Cameron, Pittsburg.
94 *Nasal Accessory Sinus Complications, Following Influenza, with Treatment. G. A. Dillinger, Pittsburg.
95 *Personal Experiences in the Surgery of Simple Types of Goiter. J. M. Wainwright, Buffalo, N. Y.
96 *Surgical Treatment of Malignant Goiter. E. Martin, Philadelphia.
97 Relations of the Thyroid Gland. S. P. Beebe, New York.
98 *The Roentgen-ray in Exophthalmic Goiter. J. C. Price, Scranton
99 Fees and Fee Bills. W. H. Hartzell, Allentown.
100 Contract Practice. J. B. Donaldson, Canonsburg.
101 Is Lodge Practice a Preventable Evil? A. B. Hirsh, Philadelphia.
102 Fees for Services to Corporations. G. W. Wagoner, Johnston.
103 Influence of Hospitals on the Doctor's Income. C. H. Ott, Sayre.
104 Medical Practice as Seen from the Outside. J. B. Walker, Philadelphia.

92. Abstracted in THE JOURNAL, Oct. 3, 1908, p. 1178.

93. Abstracted in THE JOURNAL, Oct. 17, 1908, p. 1356.

94. Abstracted in THE JOURNAL, Oct. 24, 1908, p. 1456.

95. **Surgery of Simple Goiter.**—Wainwright reports statistics of 18 patients operated on, of whom 13 were females and 5 were males. Ten cases occurred in people born in Wales or of Welsh parentage, which would apparently show that the Welsh are prone to this disease. All the patients recovered from operation, and 17 are alive and well to-day. One died of a rapid recurrence of malignant goiter five weeks after operation. There were no accidents due to the anesthetic, which was ether by the drop method, preceded by atropin. Primary union was obtained in all cases. The majority of patients ran a temperature of from 101 to 103 F. for four or five days after the operation. Tetany was not observed. Under ordinary circumstances operations for the simple type of goiter present no more danger than those for hernia or many other operations of choice. All patients giving symptoms of pressure and all showing progressive enlargement should be operated on at once. Wainwright follows Crile's rule, of leaving behind an amount of thyroid tissue about equal to the size of the normal gland.

96. **Surgical Treatment of Malignant Goiter.**—Martin says that in recent years radical cure of malignant goiter has appeared distinctly probable, provided early diagnosis be made. As this can never be made with certainty, operation, if done early, will sometimes be done on thyroids which subsequent examination will show to be benign. This is not to be regretted, for such an operation is a safe one, and a pathologic organ, which if allowed to remain might at some time undergo malignant change, ought to be removed. Distinction between the various kinds of malignant disease can not be made clinically. As the capsule of the gland offers considerable resistance, metastasis may occur early by the blood or lymph vessels, while the primary tumor is still intracapsular. In advanced cases diagnosis is easily made, but is likewise futile. Operation done early is comparatively simple and has a mortality so low as to give it absolute justification. Even after metastasis has occurred, it may be possible to remove the gland, together with the metastatic focus. With involvement of the trachea and esophagus and infiltration of the adjacent tissues, radical cure becomes a remote possibility, although complete extirpation regardless of structure has occasionally given good results.

98. **Roentgen-Ray Treatment of Exophthalmic Goiter.**—Price advocates the use of the rays in selected cases, especially in cases in which the surgeon refuses to operate, and in patients with symptoms not sufficiently severe to send them to surgeons.

American Journal of Medical Sciences, Philadelphia

December

105 *Treatment of Tetanus with Subarachnoid Injections of Magnesium Sulphate. R. T. Miller, Baltimore.
106 *Traction in Treatment of Hip Disease. W. H. Bradford and B. Soutter, Boston.
107 The Heart in Pulmonary Tuberculosis. L. Brown, New York City.
108 *The Heart During Early Period of Convalescence from Acute Infectious Disease. B. Robinson, New York.
109 *Non-Fatal Coma in Diabetes. C. N. B. Camac, New York City.
110 *Pathologic Changes in the Thyroid, as Related to Varying Symptoms in Exophthalmic Goiter. L. B. Wilson, Rochester, N. Y.
111 *Inferior Poliocencephalitis in Child of Four—Recovery. C. F. Judson and H. Carncross, Philadelphia.
112 *The Gonococcus as a Factor in Infections Following Abortion or Full Term Delivery. F. B. Gurd, Montreal, Can.
113 *New Method of Staining the Diphtheria Bacillus. W. H. Rush, St. Louis.
114 Nature of Postoperative Femoral Phlebitis. W. H. Buhlig, Chicago.

105. **Magnesium Sulphate in Tetanus.**—Miller reports a case successfully treated by 2.5 c.c. injections of a 25 per cent. solution of magnesium sulphate into the meninges, 11 punctures being made in 13 days. Extensive paralysis followed each injection and involved all the muscles except those of the head, neck and diaphragm, and lasted approximately from 18 to 29 hours. The injections were followed several times by respiratory collapse, lasting from 11 to 14 hours, and the pulse dropped, though not to a dangerous level. Antitoxin was used daily for 14 days, with copious saline enemas and sedatives for a short time. The case was one of severe tetanus in a boy 8 years old. There can be no doubt as to the value of treatment in this case. A patient in violent spasm and continuous opisthotonos was repeatedly reduced to complete and lasting relaxation in the course of a few minutes by an intraspinal injection of magnesium sulphate; a result was thus achieved surely, promptly and safely, which can be but weakly approximated by the usual sedatives, and even then after hours instead of minutes. The chief danger in the use of intraspinal injections of magnesium sulphate lies in its direct depressing influence on the respiratory center; this effect was produced repeatedly. No constant effect of the injection of the magnesium on temperature was shown. Retention of urine was the rule, and it was necessary to catheterize the patient for nine days. The author abstracts the hitherto reported cases.

106. **Hip-Joint Disease.**—Bradford and Soutter discuss the various modes of dealing with hip-joint disease, and pay special attention to the method of traction. This method has been prejudiced by the use of expensive and elaborate appliances. They discuss the mechanics of the joint and report the statistics of hip disease at the Boston Children's Hospital, in which for thirty years some form of effective traction has been used. They say that traction can be employed without using expensive or elaborate apparatus; it does not demand unusual skill in nursing or from the surgeon, or more attention in the direction of the case than is within ordinary possibilities. It can be claimed that traction meets a pathologic indication during the acute stage, that is, the stage of muscular spasm; that when used it should be applied with the purpose of furnishing distraction, that is, checking undue bone crowding; that when efficiently applied it furnishes a satisfactory measure of fixation of the joint; and that when traction is employed better results are obtained than when it is not made use of during the course of treatment of hip disease.

108. **The Heart in Acute Infectious Disease.**—Robinson insists on the importance of paying proper attention to the

heart in all cases of infectious diseases, after the disease has been battled with. He emphasizes the necessity of not confounding pathologic lesions due to other and preceding causes with those due to the infectious disease under investigation. This is especially true of the lesions of pre-existing myocarditis. He then discusses the prophylactic treatment of the heart after typhoid fever, scarlet fever, pneumonia, etc.

109. Abstracted in THE JOURNAL, May 30, 1908, p. 1817.

110. **The Thyroid and Exophthalmic Goiter.**—In an elaborately illustrated article, Wilson discusses the pathologic changes in the thyroid gland in relation to the symptoms in exophthalmic goiter, and makes the following tentative statements from the clinical standpoint:

1. Very early acute cases show pathologically hyperemia and cellular hyperplasia, if not throughout the gland at least in much of it provided of course the more enlarged lobe has been removed.
2. Later acute, moderate, severe and very severe cases show greater parenchyma increase, and in many instances evidence of increased absorbable secretion. Speaking broadly, the parenchyma increase is in direct proportion to the intensity of the symptoms. The relatively few variations from this rule, may be accounted for by the varying resisting power of different individuals. When relatively small amounts of absorbable secretion are found in alveoli whose walls are crowded with actively functionating cells, we may fairly assume that the secretion has already been absorbed.
3. Cases which clinically are showing any remission of toxic symptoms show somewhere within the gland more or less evidence of decreased function in the exfoliation or marked flattening of parenchyma cells, or of probably decreased absorption, by the presence of thick, gelatinous, stainable secretion, the so-called colloid.
4. Patients who have recovered from their toxic symptoms and are now suffering principally from long, previously acquired heart or nerve lesions, or from myxedema (although no myxedema cases are included in the present list) show exfoliated or much flattened (probably non-secreting) epithelium and large quantities of well-stained, thick gelatinous, probably non-absorable, colloid. In this class of cases it sems as futile to search for previous, causative parenchyma increase as to look for diphtheria membrane in the throat of a patient suffering from postdiphtheritic paralysis.
5. The recently developed, very mild or moderately mild, cases of long standing show pathologically almost always some total parenchyma increase by the multiplication of aveoli, but apparently not greatly increased functioning power of the individual parenchyma cells. Goiters of the adenoid type apparently pass through the same changes of hypertrophy and degeneration as those of the papilliferous type.
6. Simple goiters should be regarded as multiple retention cysts filled with non-absorbable secretion, cell detritus, etc.

113. **Staining the Diphtheria Bacillus.**—Rush describes with colored illustrations a method of staining the diphtheria bacillus for which he claims the following advantages: Accessibility of the necessary reagents; ease of preparing the staining solutions; wide working limits; and striking and characteristic appearance of the organisms when so stained.

University of Pennsylvania Medical Bulletin, Philadelphia

December

115 Adenolipomatosis, with Report of a Case. C. K. Mills, Philadelphia.
116 *Comparative Study of Noma. C. Y. White and J. D. Blackwood, Philadelphia.
117 *Experiments Concerning Extrauterine Pregnancy and the Influence of Operation on the Course of Pregnancy. L. Loeb and J. W. Hunter, Philadelphia.
118 Stricture of the Esophagus; with Report of Eight Cases from the Children's Hospital of Philadelphia. A. P. C. Ashhurst, Philadelphia.

116. **Noma.**—White and Blackwood discuss the various theories put forth with reference to the etiology of noma and describe a case in a wild animal (*Macacus rhesus*) showing the anatomic and clinical characteristics of the disease. A fusiform bacillus and spiral micro-organism resembling Vincent's spirillum were found in the exudate and scrapings of the diseased area, there being also a great increase in spiral micro-organisms. The histologic examination showed the presence of rod-like and thread-like organisms similar to those described by Perthes, Brüning and others in the diseased area, being especially located in the area of advancing disease. A spiral organism resembling Vincent's spirillum in conjunction with a fusiform bacillus is found in the normal monkey's mouth. Fusiform bacilli are frequently present in small numbers in the mouths of monkeys. The authors make no claim that the organisms present are the cause of this condition of noma, but call attention to the fact that their findings are similar to those reported in a corresponding condition in human beings by others.

117. **Extrauterine Pregnancy.**—Loeb and Hunter give experimental evidence to show that occlusion of the Fallopian tube does not lead to tubal pregnancy in guinea-pigs. In extended experiments in which an ovum most probably entered the peritoneal cavity, abdominal pregnancy has never been found to occur. The conditions on which the development of an extrauterine pregnancy depends are discussed, and the observation is recorded that it is possible to produce experimental deciduæ at will without previous fertilization of the ovum. Data are presented indicating the effect of extra-abdominal and intra-abdominal operation on the development and course of pregnancy in animals. As a whole, it follows from these observations that the normal development of pregnancy in animals is interfered with in many cases by extra-abdominal as well as by intra-abdominal operations; furthermore, that the result depends to some degree on the period at which the operation has been performed. The normal development of or the interruption of pregnancy is, therefore, not suitable as an indicator of conditions which are supposed to have a specific influence on pregnancy. After a preceding copulation, transplantation of pieces of the uterus may lead to the formation of a decidua in the transplanted piece, but the development of an embryo could not be observed under such conditions.

Archives of Internal Medicine, Chicago

December

119 *Comparison of the von Pirquet, Calmette and Moro Tuberculin Tests and Their Diagnostic Value. S. McC. Hamill, H. C. Carpenter and T. A. Cope, Philadelphia.
120 *Acidosis and Associated Conditions (concluded). J. Ewing, New York.

119. Abstracted in THE JOURNAL, June 6, 1908, p. 1930.

120. **Acidosis.**—Ewing concludes his paper with a consideration of the physiologic chemistry of acetone compounds. He discusses the sources of acetone compounds, their relation to carbohydrates, fats and proteins, the intestinal origin of acetonuria, the toxicity of acetone compounds and their relation to oxidation, and the physiology of lactic acid. He concludes with a consideration of the clinical types of acidosis—the acidosis of starvation, of pregnancy, cyclic vomiting, after anesthesia, and miscellaneous clinical types, namely in hysteria, cancer, psychosis, fever and that due to drugs. In concluding, he says that the work on acidosis reveals the exact nature and degree of a disturbance of metabolism which is of widespread occurrence and of prime significance in many diseases. To the physician it affords a means of diagnosis and an insight into the nature of the disease, otherwise likely to escape attention. To the pathologic anatomist it has disclosed the main factors in the pathogenesis of fatty degeneration. Read in terms of physiologic chemistry, acute degeneration of the liver becomes of first importance to the pathologist. In physiologic chemistry it shows that acidosis with the presence of acetone compounds usually results from abnormal metabolism of body or food fats, and to a less extent of protein, in which defective consumption of carbohydrates is an essential factor, and excessive excretion of ammonia a purely compensatory process. The therapeutic importance has possibly been overestimated. It seems time that the idea of a fatal abstraction of alkali in diabetic coma should give place to unbiased search for other factors in this disease, some of which may be affected by treatment. The study of acidosis shows clearly that the feeding of the healthy man as well as the diet of the sick can not be left to chance guided by appetite or ruled by tradition, but can be safely directed according to the laws of digestion and metabolism.

American Journal of Physiology, Boston

December

121 *Are the Anesthesia and Motor Paralysis Caused by Magnesium Salts Due to Asphyxia? S. J. Meltzer and J. Auer, New York.
122 *Diastases in the Blood and the Body Fluids. A. J. Carlson and A. B. Luckhardt, Chicago.
123 *Course of the Contraction Wave in the Stomach of the Rabbit. J. Auer, New York.
124 *Effect of Stimulation of the Accelerator Nerve on the Calcium, Potassium and Nitrogen Metabolism of the Isolated Heart. W. H. Howell and W. W. Duke, Baltimore.
125 Different Forms of Nitrogen in Proteins. T. B. Osborne, C. S. Leavenworth and C. A. Brautlecht, New Haven, Conn.
126 Effect of Salt Solutions on the Respiration, Heart Beat and Blood Pressure in the Skate. I. H. Hyde, Kansas City, Kans.

121. **Anesthesia and Motor Paralysis.**—In opposition to the objections of A. H. Ryan and C. C. Guthrie, that the anesthesia produced by magnesium salts is due to asphyxia, Meltzer and Auer show from their former papers and by new experiments that the magnesium salts paralyze respiration and produce anesthesia independently of asphyxia. The paralysis and anesthesia are not preceded by any stage of excitement, such as occurs in asphyxiated mammals, and no symptoms of asphyxia are exhibited if artificial respiration is maintained, although the animals are profoundly anesthetized.

122. **Diastases in the Blood and Body Fluids.**—Carlson and Luckhardt find the greatest prevalence of diastase in the blood serum. They find no constant difference in the concentration of the diastases in the portal and hepatic serum, nor does pancreatectomy affect the concentration of the blood and lymph diastase. Anesthesia appears to cause a slight decrease in the blood diastase. Neither a relative abundance of carbohydrates in the natural diet of a species, nor an increase of starchy foodstuffs in the diet, has any influence on the amount of diastase in the blood. All the facts so far at hand seem to point to the conclusion that the blood and lymph diastase are "discards" of the tissues in general. When once in the body fluids, these substances are in all probability on the road to destruction or elimination, and serve no further essential end in the body economy, at least so far as regards their starch-splitting power.

123. **Contraction of Stomach.**—Several observers have stated that the contraction wave of the stomach is simply peristaltic. On the other hand, early investigators, such as Beaumont, Hofmeister and Schutz, describe a wave which is peristaltic only so far as the antrum, where a marked constriction occurs and the antrum contracts as a whole, reaching its maximum after the antral sphincter has relaxed. According to Auer's observations on rabbits, which agree with those of other observers on dogs, the contraction wave of the stomach consists of two parts: The first wave begins near the esophagus and passes toward the pylorus, but skips a good portion of the preantral pouch. This is followed by a contraction of the antrum, which passes toward the preantrum and expels some of the gastric contents into the preantral pouch, so as to cause considerable bulging. The antrum then relaxes slowly, and with this relaxation the preantrum sinks away, usually without any sign of peristalsis.

124. **Stimulation of the Accelerator Nerve.**—In a previous article (*Amer. Jour. Physiol.*, February, 1908; abstracted in THE JOURNAL, March 28, 1908, p. 1079), Howell and Duke showed that there is an output of potassium from the heart substance during vagus inhibition. In the same paper they suggested that during stimulation of accelerator nerve there may be an output of calcium sufficient to account for the augmentation and, perhaps, for the acceleration of the beat. They attempted to prove this by direct experiments on the perfused heart. The results of these experiments were entirely negative, no increase in calcium being shown. Attempts to determine the nature of the nitrogen metabolism of the heart indicate that no purin bodies are produced by its activity. The heart appears to give off creatinin (or creatin) to the circulating liquid, and it will be interesting to determine how far this elimination is associated with functional activity.

Northwest Medicine, Seattle, Wash.

December

127 *Diagnostic and Prognostic Value of the Leucocyte Count in Surgical Diseases. J. E. Else, Pullman, Wash.
128 *Formation of Correct Habits, as a Factor in Treatment of Pulmonary Tuberculosis. E. A. Pierce, Portland, Ore.
129 Therapeutic Application of Bacterial Vaccines in Localized Tuberculosis and Some Other Bacterial Diseases. R. C. Matson, Portland, Ore.

127. **Leucocyte Count.**—Else discusses the literature, describes the technic, and concludes that the leucocyte count is one of the most accurate and sensitive indications to the patient's condition, and, in the presence of an infection, should not be overlooked any more than taking the temperature. The differential as well as the total count should always be made. Leucocytosis indicates absorbed pus, not retained pus. Other things being equal: (a) a low leucocyte count with a slight increase in the percentage of polynuclear cells offers a very favorable prognosis; (b) a low leucocyte count with a high percentage of polynuclear cells offers a very unfavorable prognosis; (c) a high leucocyte count with a high percentage of polynuclear cells offers a grave prognosis; (d) a high leucocyte count with a low percentage of polynuclear cells offers a favorable prognosis; (e) a rising leucocyte count indicates that the prognosis is increasing in gravity, especially if the percentage of polynuclear cells is high or increasing; (f) a falling leucocytosis with a high stationary or rising percentage of polynuclear leucocytes offers a grave prognosis, increasing in gravity; (g) a falling leucocytosis with a slight increase or a falling percentage of polynuclear cells indicates an improving prognosis. The total leucocyte count indicates the severity of the battle that is taking place between the resisting powers of the patient and the infection. The degree of increase in the polynuclear leucocyte percentage indicates the amount of toxin absorbed, as compared with the resistance of the patient.

128. **Correct Habits in Pulmonary Tuberculosis.**—Pearce urges the importance of forming correct habits in regard to rest, especially on occurrence of hemorrhage, avoidance of coughing, digestion, sleep, exercise, tobacco, expectoration, alcohol, sexual desire, wearing of beards, kissing, coughing, excitement, the sputum, bathing, discussion of the case, clothing, the drug habit, temperature record and use of the voice.

Journal of Cutaneous Diseases, New York

December

130 Keratosis Follicularis Resulting in Multiple Epithelioma: Report of a Case. G. W. Wende, Buffalo.
131 Xanthoma Diabeticorum and Lipoma Multiplex and Xanthoma Approaching the Diabetic Type with Diabetes Insipidus. W. A. Pusey and O. P. Johnstone, Chicago.
132 Case of Nævus Unius Lateris. A. Schalek, Omaha, Neb.
133 Pemphigus and Bullous Dermatoses. J. MacF. Winfield, New York.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

Lancet, London

January 2

1 *Why and How the Surgeon Should Attempt to Preserve the Appendix. C. B. Keetley.
2 Renal Calculus, Diagnosis and Treatment. D. Newman.
3 *Absorption of Proteins. W. D. Halliburton.
4 *Treatment of Inguinal Hernia in Children. W. H. Evans.
5 Acromegaly, with Illustrative Cases. G. Rankin, and R. O. Moon.
6 Features of Some Chronic Affections of the Lungs in Children. T. Fisher.
7 *Prospective Cure for Elephantiasis. W. S. Handley.

1. **Preservation of the Appendix.**—Keetley endeavors to show: 1, That transplantation of the appendix, so that the whole or greater part of it from its root in the cecum lies permanently imbedded in the abdominal wall, will produce the good results of excising it; 2, that it is a practical and safe operation; and 3, that transplantation of the appendix in many cases should be preferred to appendicectomy; also that, when constipation requires to be treated surgically, appendicostomy should be the operation chosen. He reports cases and draws from them inferences as to the value of appendicostomy for various purposes, and adds some cases of cecostomy in which that operation had to be substituted because the appendix had either been removed or was impervious.

3. **Absorption of Proteins.**—Halliburton gives his reasons for his change of views on the absorption of proteins, to which Pavy called critical attention in the *Lancet*, Nov. 28, 1908 (abstracted in THE JOURNAL, December 26, p. 2235).

4. **Inguinal Hernia in Children.**—Evans sums up his experience as follows: First, attempts may be made during the first year by the careful application of a truss to induce an obliteration of the funicular process. But these attempts should not be continued beyond the end of the first year unless some condition is present which renders an operation undesirable, while, on the other hand, it may be necessary to operate at even an earlier age if the hernia can not be satis-

factorily restrained by a truss. Second, a simple removal of the sac, if thoroughly carried out, is all that is needed to prevent a recurrence of the hernia in children.

7. **Elephantiasis.**—Handley reports an extension of the operation of lymphangioplasty, formerly reported by him as successful in relieving the "brawny arm" of breast cancer, to the treatment of elephantiasis arabum.

British Medical Journal, London

January 2

9 *Results of Operations for Carcinoma of the Tongue. H. T. Butlin.
10 *Operative Treatment of Intraoral Cancer. C. P. Childe.
11 *Surgery of Colitis. F. C. Wallis.
12 Treatment of Chronic Rheumatic and Rheumatoid Arthritis by Radiant Heat and Cataphoresis. C. F. Bailey.
13 Restoration of Vision in the Squinting Eye. A. A. Bradburne.
14 Persistent Thymus and Sudden Death. S. H. Daukes.

9. **Carcinoma of the Tongue.**—Butlin analyzes the results of his operations for carcinoma of the tongue in 197 cases. Among the inferences are the following: There are no advantages in postponing the operation on the glands until they are enlarged. The removal of the contents of the anterior triangle is hardly sufficient as a routine procedure, and he advises that the dissection be carried into the posterior triangle, and to the glands in the parotid region, removing even the lower part of the parotid salivary gland if necessary. His notes are insufficient to decide the necessity of removing the glands on both sides of the neck. A wider removal of the glands, however, appears necessary, in the following cases: 1. Those cases in which the glands on both sides of the neck are enlarged. 2. Those cases in which the glands are affected only on the side of the neck opposite the disease. 3. Those cases in which the disease is seated on both sides of the tongue, or in which it reaches to the middle line of the tongue. 4. Probably it ought to be done in those cases in which microscopic examination gives reason to believe that, although the primary disease is apparently only of small extent and depth, it is much more malignant than usual; when, for instance, columns of cancer cells are found running deeply down between the muscular fibers. Butlin's figures do not support Cheatle's suggestion as to the removal of the muscles in every case of cancer of one-half the tongue, but he thinks it desirable to carry it into effect in more advanced cases, especially when the disease lies beneath the tongue in the floor of the mouth. The objections are impairment of speech and of mastication. He does not consider the evidence in favor of removing the tissues between the primary disease and the glands strong enough to justify the extra risk involved. The anterior part of the dorsum appears to be the least dangerous seat of cancer in relation to affection of the glands. In opposition to the general impression among surgeons, Butlin thinks that it may fairly be assumed that cancer originating in the floor of the mouth can be removed with a good prospect of success, provided it is not very extensive and has not involved the bone. As to recurrent disease, the results of operation for its removal, whether of the tongue or glands, have been so bad that operators are counselled to make the first operation as complete as possible, in the belief that the only hope of the patient lies in the thorough manner in which this operation is performed.

10. **Intraoral Cancer.**—Childe sums up the two main principles that he advocates in the operative treatment of cancer of tongue and floor of mouth as follows: The neck should always be attacked first, with ligature of the lingual and facial arteries on one or both sides. This maneuver reduces the excision of the primary growth, provided that it can be extirpated without division of the jaw, to an insignificant and bloodless operation, which can be frequently performed without danger immediately after the neck operation. It enables the primary growth to be removed with greater precision. It does away with all necessity for preliminary laryngotomy or tracheotomy. It cuts off the blood supply to the tumor in the interval, if the operation has to be divided into two stages. It will possibly starve cancer cells which may be left behind after attempted extirpation of the disease. In his experience it is the key to the operation. A communication between the mouth and a large wound in the neck should always be avoided when possible. Unless the disease be situated in the tonsil or its neighborhood, and except the patient insist on a single operation, this can always be accomplished by dividing the operation into two stages in those cases in which, for the satisfactory removal of the disease, the lower jaw requires division. The neck, as before, is attacked first, and the lingual and facial arteries are tied. In a fortnight, the large wound in the neck is healed, the jaw is divided and the primary growth is excised, as before, bloodlessly. In conclusion, as regards final results, early diagnosis is the only hope. With this view, the therapeutic test of cancer by iodid of potassium should be relegated to the limbo of dangerous playthings. Immediate microscopic examination of a piece of the growth should be the only test, and the therapeutic test should never be employed unless the microscopic report is doubtful. It should then be pushed rapidly, and its effects not watched too long.

11. **Colitis.**—Wallis discusses acute and chronic colitis, classifying the latter into mucous, membranous, ulcerative and hemorrhagic colitis. The methods of surgical treatment at present used are appendicostomy, cecostomy, colostomy, and median posterior proctotomy, to which must be added cataphoresis. He discusses each of these and concludes that the sooner all forms of hemorrhagic or ulcerative colitis are submitted to surgical treatment, of which the best is the irrigation of the bowel through the surgical opening, the better. The aim is to get the colon free of infective contents. Chemical applications must be used with caution. The best treatment for ulcerative areas is cataphoresis. Of vaccines, Wallis' experience is insufficient to draw conclusions from. We can not yet arrive at definite conclusions as to surgical procedure in membranous colitis. He insists on the great importance of early examination by the sigmoidoscope.

Medical Press and Circular, London

December 30

15 *Rheumatoid Arthritis and Its Treatment. W. Murrell.
16 Diagnosis and Treatment of Breast Cancer. R. Morison.
17 Some Desirable Additions to the British Pharmacopeia. J. C. McWalter.
18 Compensation for Injuries and Payment for First Aid. G. Crichton.

15. **Rheumatoid Arthritis.**—Murrell considers this condition under the four following heads: 1. The chronic arthritis of middle-aged women. 2. Acute rheumatoid arthritis. 3. Senile osteoarthritis. 4. Various forms of the disease in children. The prognosis in most forms of rheumatoid arthritis is unfavorable with regard to the prospect of cure. Medicinally, the iodids internally, in large doses quite apart from any syphilitic taint, are useful, as is also arsenic, which, however, is slow acting and must be continued for weeks or months. Locally, persistent application of iodin is serviceable; warm baths and hot and cold salt douches may alleviate. Mechanical or electric vibration has proved useful. Residence during the winter in a hot, dry bracing climate has been followed by arrest of the disease. In hospital cases Murrell has recently used a serum which has acted admirably. Details of its preparation are given in his article on "Serum Therapy" in the *Encyclopedia Medica*, Vol. xii, 1902. He reports a noteworthy case benefited by this treatment.

Clinical Journal, London

December 30

19 Neurasthenia in Women. G. E. Herman.
20 How Cancer Patients Die. J. Bland-Sutton.
21 *Tubercle and Underwear. L. Williams.

21. **Tubercle and Underwear.**—Williams protests against the use of flannel or wool underwear, and says that of the two properties essential to wholesome underwear—warmth and the power of absorption—flannel possesses only warmth, while a high degree of absorptive power is hygienically the more important. The excrementitious moisture from the skin in those who wear flannel can not escape and lies imprisoned between the garment and the skin, thus rendering this layer impure and preventing cutaneous respiration. The tuberculous poison is a powerful vasodilator, so that the wearing of

flannel imitates closely the results which the bacillus itself affects, results presumably most advantageous to its development. Moreover, vasodilatation means low blood pressure, and this means physical latitude and mental lethargy. It is as important to supply abundant fresh air to the cutaneous respiration as to the pulmonary. To struggle against tuberculosis, the skin should be trained by cold bathing and exposure to other cold influences to perform adequately its contractile duties. Hot houses must be avoided, underclothing should be warm, absorbent and ventilated. Linen, cotton and silk undergarments can be made to imprison air in their meshes and are just as warm as flannel, and superior in absorptive and ventilating properties.

Bristol Medico-Chirurgical Journal

December

22 *Recent Work on Leukemia, and Some Allied Affections. J. M. Clarke.
23 *Causation of Certain Mid-diastolic Murmurs. C. Coombs.
24 Dilatation of Posterior Cerebral Vessels with Basal Hemorrhage in a Girl Aged 16. T. M. Carter.
25 A Medical Naval Volunteer on Duty at Quebec, July, 1908. W. K. Wills.

22. **Leukemia.**—Clarke says that a decisive answer to the question of the relation of leukemia to sarcoma can not be given with our present knowledge, and that at present it is extremely difficult to state where lymphatic hyperplasia ends and tumor begins; but the very fact of the indefinite number of gradations which are found between the cases at the two ends of the scale affords an additional argument against regarding leukemia as a sarcoma.

23. **Mid-diastolic Murmurs.**—Coombs summarizes his paper as follows:

In aortic regurgitation, early rheumatic carditis, and adherent pericardium, diastolic murmurs are heard at the mitral area.

In their principal features these murmurs are so much alike as to suggest a common mode of production.

Autopsy shows that in all three diseases such murmurs may occur without valvular mitral stenosis being present.

Probably in such cases the bruit is due to vibration in the blood sucked by ventricular diastole into an enlarged ventricle, through a mitral orifice not so much enlarged.

Dublin Journal of Medical Science

December

26 History of Medicine in Ireland. T. G. Moorhead.
27 *Old Documents in Medical Educational Practice. J. J. Walsh.

27. **Old Documents on Medical Educational Practice.**—Walsh reviews the evolution of legislation regulating medical practice and quotes the Bull of Pope John XXII (A. D. 1321) founding the medical school of Perugia, as well as the law of Frederick II regulating medical practice in the Sicilies, which last was published in THE JOURNAL, Feb. 1, 1908, p. 388.

Indian Medical Gazette, Calcutta

November

28 Recent Epidemic of Phagedenic Ulcers in Assam, with Remarks on a Bacillus Present in the Sores. R. L. Patterson.
29 Twenty Years of Puerperal Eclampsia at the Government Maternity Hospital, Madras. G. G. Giffard.
30 Gleanings from the Calcutta Postmortem Records. L. Rogers.
31 Pyorrhea Alveolaris; from a Tropical Standpoint. C. F. Badcock.

Intercolonial Medical Journal of Australasia, Melbourne

November

32 An Epidemic of 135 Cases of Acute Anterior Poliomyelitis Occurring in Victoria. H. D. Stephens.
33 Serodiagnosis of Syphilis. K. Hiller.
34 Action of X-Rays on the Skin. F. J. Clendinnen.
35 Treatment of Stammering, with Special Relation to Respiratory Exercises. T. G. Leary.
36 Treatment of the Insane in Private Practice in Victoria. W. Beattie-Smith.

Annales de Dermatologie et de Syphiligraphie, Paris

November, IX, No. 11, pp. 609-672

37 Faviform Trichophyton-Fungi. R. Sabouraud.
38 Comparative Histopathology of the Skin. (Notes sur l'histopathologie comparée de la peau: tumeurs, folliculites à Demodex, botryomycose, etc.) C. Audrey and F. Suffran.

Annales de Gynécologie et d'Obstétrique, Paris

December, XII, No. 5, pp. 705-763

39 Racemose Ovarian Cysts. (Kystes racémeux de l'ovaire.) Le Jemtel.

Annales de l'Institut Pasteur, Paris

November 25, XXII, No. 11, pp. 833-928

40 Trypanosoma Congolense. A. Laveran.
41 Strains of Trypanosomes Resistant to Drugs. (Propriétés des races de Trypanosomes résistants aux médicaments.) F. Mesnil and E. Brimont.
42 Ankylostomiasis and Beriberi in Cochin China. F. Noc.
43 Significance of Colon Bacillus in Drinking Water. (Etude du Bacillus coli dans les eaux de Toulouse.) Guiraud and H. Maudoul.
44 New Form of Diplococcus. (Tetradiplococcus filiformans "Lodzensis.") S. Bartoszewicz.

Presse Médicale, Paris

December 19, XVI, No. 102, pp. 817-832

45 *Care and Future of the Prematurely Born. (Le prématuré). C. Maygrier.
46 Diagnosis and Treatment by Bronchoesophagoscopy of Certain Rare Intrathoracic Affections. Guisez.
47 Sexual Continence and Arteriosclerosis. P. Remlinger.
48 Gymnastic Exercises of the Ankle. (Gymnastique du cou-de-pied.) P. Desfosses.
49 Perforating Ulcer of the Foot, of Tuberculous Origin. (Mal perforant plantaire d'origine tuberculeuse.) L. Arnaud.

December 23, No. 103, pp. 833-848

50 Immunization Against Tuberculosis by the Digestive Route. A. Calmette.
51 Local Treatment of Skin Affections. (Le pansement de jour en dermatologie.) L. M. Pautrier.

45. **Prematurely Born Children.**—Maygrier warns against three great dangers that confront the prematurely born, chilling, defective feeding and infections. If infections can be warded off and the child fed with breast milk, even if it is drawn and fed with a spoon, a drop at a time, it is liable to grow up healthy and strong after it has been tided past the stage of extra helplessness. In his own and Budin's experience fully 90 per cent. have lived of the children born between the end of the sixth and eighth months.

Semaine Médicale, Paris

December 23, XXVIII, No. 52, pp. 613-620

52 Is the Jewish Race Immune to Alcoholism? (La race juive jouit-elle d'une immunité à l'égard de l'alcoholisme?) L. Cheinisse.
53 *Curability of Certain Cases of Tabetic Amyotrophy. (Comme quoi certaines amyotrophies du tabes reconnaissent une origine syphilitique.) J. Lhermitte.

53. **Connection of Tabetic Amyotrophy with Syphilis.**—Lhermitte concludes from a review of recent research that atrophy of the muscles occurs in about 20 per cent. of all cases of tabes, but that it may be the result of two separate processes. Besides the amyotrophy secondary to the true tabetic lesions of the spinal or cranial nerves, there may be amyotrophy due to progressive destruction of the motor cells of the gray matter in the spinal cord and medulla oblongata. In the latter case the process is independent of the tabes, and is merely the work of the same syphilitic virus causing the tabes and the sclerosis of the posterior cords. This has great practical importance, as it shows that the amyotrophy in these conditions may be arrested and possibly cured by specific treatment.

Archiv für Gynaekologie, Berlin

LXXXVII, No. 1, pp. 1-231. Last indexed Dec. 19, p. 2192

54 Cystic Formations in Abdominal Cavity. (Zur Kenntniss seltener cystischer Bildungen in der Bauchhöhle.) K. Himmelheber.
55 *Eclampsia. (Zur Klinik, Statistik und Therapie der Eklampsie.) L. Seitz.
56 Tuberculosis in Pregnant Women. (Zur Tuberkulose in der Schwangerschaft.) A. Rieländer and K. Mayer.
57 *Metastasis of Uterine Carcinoma in Organs with an Internal Secretion. H. Offergeld.
58 Twins with Excess of Amniotic Fluid for One and Lack of It for the Other. (Fall von einseitiger Polyhydramnie mit anderseitiger Oligohydramnie bei eineigen Zwillingen.) H. Hunziker-Kramer.
59 Influence of Syphilis on the Offspring. (Einfluss der Syphilis auf die Nachkommenschaft.) Gräfenberg.
60 Primary Carcinoma in the Fallopian Tube. W. Benthin.

55. **Eclampsia.**—Seitz writes from Döderlein's clinic at Munich to expatiate on the advantages of prompt delivery in the treatment of eclampsia. He reviews the experiences from fifteen different clinics to show that in 50 per cent. of all the cases the convulsions ceased after delivery. The proportion was about the same for the operative and the spontaneous births. The number of convulsions is no criterion for the

severity of the eclamptic intoxication. The reduced mortality snows the effects of treatment by prompt delivery. The mortality was 20.2 per cent. in 512 cases of spontaneous delivery and 24 per cent. in 982 cases in which version, the forceps or other operative intervention had been required. Omitting Schauta's 132 cases from these figures, as dating from before the eighties, the mortality is only 22 per cent. Early and rapid delivery is thus shown to be the best method of treating eclampsia. Outside of institutions, the general practitioner may dilate the cervix if necessary by traction on the inflatable bag or, by sacrificing the child, by traction on the leg after version.

57. **Metastasis of Uterine Carcinoma in Organs with Internal Secretion.**—Offergeld discusses the metastasis in the thyroid, suprarenals and kidneys, the latter more frequent than the others, although all are very rare. The causes for the rarity of the metastasis in these organs are the specific albuminoid bodies in them and their special metabolism. Metastasis can not occur in these organs, he says, until after the loss of the neutralizing and ferment functions of the liver.

Archiv für klinische Chirurgie, Berlin

LXXXVIII, No. 1, pp. 1-318. Last indexed Dec. 12, p. 2094.

61 Chronic Inflammatory Tumors in Abdominal Wall After Operations for Hernia. (Chronisch entzündliche Bauchdeckentumoren nach Hernienoperationen.) H. Schloffer.
62 Experimental Study of Histologic and Clinical Laws to which Plastic Operations on Bones Must Conform. (Gesetze der freien Osteoplastik auf Grund von Thierversuchen.) G. Axhausen.
63 *Pain in the Heel: Pathology of the Calcaneus and Achilles Tendon. (Ueber Fersenschmerzen.) H. Jacobsthal.
64 Prosthesis for Gunshot Damage to Lower Jaw. (Prothetische Nachbehandlung der Unterkieferschussverletzungen.) T. Hashimoto and others.
65 *Operative and Ultimate Results in Cancer of the Stomach. (Operations- und Dauererfolge beim maligner Geschwulstbildung des Magens.) F. Goldschwend.
66 *Amputation Aiming for Functional Utilization of All the Forces Left. (Amputatio humeri osteoplastica et antibrachii tenoplastica.) J. Elgart.
67 Fibroepithelial Changes in Breast. (Fibroepitheliale Veränderungen der Brustdrüse.) P. Theile.
68 Etiology of Congenital Atresia of Intestine and Esophagus. Kreuter.
69 Congenital Sacral Tumor of Tissue Belonging to Central Nervous System. (Ein aus Centralnervengewebe bestehender Tumor sacralis congenitus.) H. Scheuermann.

63. **Pain in the Heel.**—Jacobsthal reports 42 cases of various affections of the Achilles tendon or calcaneus causing pain, and discusses the diagnosis and treatment. The trouble was traumatic inflammation of the Achilles tendon, crushing, partial rupture, ossification, fibroma or inflammation in the environment in 16 cases, and in the others the calcaneus was involved, either exostosis, or an affection of the epiphysis, a spur on the calcaneus or the effects of contusion or else the diagnosis was still wavering. This experience shows the multiplicity of the causes that may induce chronic pain in the heel. In 13 cases there was also pain in the sole, and in 6 of these a spur was discovered.

65. **Cancer of the Stomach.**—Goldschwend reports the experiences with operative treatment of malignant tumors in the stomach at Brenner's clinic at Linz. A total of 60 radical operations for cancer were done and 179 palliative operations, with 155 operations for non-malignant affections.

66. **Amputation Aiming to Utilize the Functional Forces Left.**—Elgart aims to adapt the amputation to utilize all the functional forces still available in the stump, and he gives an illustrated description of an artificial hand and forearm constructed on these principles. The patient wearing it is able to flex his hand normally, bend and flex the elbow and fingers, the movements being very much like the normal types, while the construction of the prosthesis is very simple and the whole appliance is very light. The main point is to modify the technic of the amputation to give a firm hold for the various parts of the prosthetic appliance.

Beiträge zur klinische Chirurgie, Tübingen

November, LX, No. 3, pp. 431-825

70 **Transplantation of Thyroid by Suture of the Vessels. (Transplantation der Schilddrüse mittels Gefässnaht.) R. Stich and M. Makkas.**
71 **Importance of Mediastinal Emphysema in Pathology of Pneumothorax. (Beitrag zur Kenntnis der Lungenverletzungen nach Brustwandkontusionen.) F. Sauerbruch.**
72 *Operations in Posterior Cranial Fossa. (Operationen in der hinteren Schädelgrube.) B. Baisch.
73 Experimental Research on Transplantation of Small Intestine. (Dünndarmtransplantation an den Ort der Wahl.) P. Esau.
74 Surgery and Pathology of Cholelithiasis. H. Rimann.
75 Treatment of Diffuse Suppurative Peritonitis. N. Guleke.
76 Results of Treatment of Fractures of Leg with Zuppinger's Automatic Extension Apparatus. A. Wettstein.
77 Prosthesis of Lower Jaw. (Prothesenbehandlung nach Resektion und Exartikulation des Unterkiefers.) C. Kohen-Baranowa.
78 Resection of Lisfranc's Joint in Treatment of Talipes Cavus. (Resektion des Lisfranc'schen Gelenkes zur Therapie des Hohlfusses.) A. Hofmann.
79 Colloid Cancer of the Breast. (Der Gallertkrebs der Brustdrüse.) G. Gaabe.
80 Operative Treatment of Excessive Growth of Lower Lip. (Fall von Makrocheilie.) W. Wolf.
81 Treatment of Streptococcus Sepsis. O. Elsässer.

72. **Operations in the Posterior Cranial Fossa.**—Baisch describes two cases in which great improvement followed removal of a cyst in the cerebellum. The patients were 16 and 47 years old, respectively. In a third case the patient succumbed soon after the operation. In a fourth case a tumor in the cerebello-pontine angle, of traumatic origin, was removed with great improvement. In another case the assumed tumor was not found and the patient succumbed to hemorrhage in the subdural space, for which the operation was evidently responsible. The cases with favorable outcome are constantly increasing in number and the results growing better as the lesion is differentiated in time and removed before the optic nerve is irreparably injured.

Berliner klinische Wochenschrift

December 14, XLV, No. 50, pp. 2213-2256

82 Madelung's Deformity of the Wrist. (Ueber Madelung'sche Handgelenksdeformität.) R. Levy.
83 *Successful Treatment of Cysticercus and Echinococcus with Male Fern. (Behandlung des Cysticercus und Echinococcus mit Extract. filicis mar. aether.) de Renzi.
84 Toxic Action of Subcutaneous Saline Infusion and How to Prevent It. (Giftwirkung und Entgiftung des Kochsalzes bei subkutaner Infusion.) L. F. Meyer.
85 Thyreogenic Destruction of Albumin. (Zum thyreogenen Eiweisszerfall.) K. Mayer.
86 Hysteric Fever. F. Mörchen.
87 Present Status of Intravenous Therapy. F. Mendel. Commenced in No. 49.

83. **Treatment of Inaccessible Echinococcus and Cysticercus Infection with Male Fern.**—In case the lesions are beyond the reach of the surgeon, de Renzi has found that it is possible to influence them by administering extract of male fern. In the four cases in which he has applied this treatment the lesions were in the liver, lung or brain, and all the symptoms rapidly subsided under the influence of this medication. Among the effects testifying to the beneficial action of the drug was the invariable subsidence of the previous high eosinophilia, showing that there is an interchange of certain substances between the host and the parasites. In two cases the eosinophilia dropped from 9 and 8 to 1 per cent. The patients were all adults.

Deutsches Archiv für klinische Medizin, Leipsic

XCIV, Nos. 5-6, pp. 441-608. Last indexed Dec. 12, p. 2096

88 Measurement of Blood Pressure by von Recklinghausen and Korotkoff's Technics. (Zur Methodik der Blutdruckmessung.) G. Lang and S. Manswetowa.
89 Changes in Arterial Pressure in Heart Disease with Failing Compensation. (Zur Frage der Veränderung des arteriellen Blutdrucks bei Herzkranken während der Kompensationsstörung.) Id.
90 Percussion of Absolute Cardiac Dulness and Its Importance for Determination of Size of Heart. (Perkussion der absoluten Herzdämpfung und deren Wert für die Bestimmung der Herzgrösse.) Schieffer and A. Weber.
91 *Percussion. Goldscheider.
92 Supply of Oxygen in the Anemic. (Sauerstoffversorgung bei Anämien.) P. Morawitz and W. Röhmer.
93 Experimental Research on Behavior of Leucocytes After Injection of Extracts of Bacteria. (Verhalten der Leukocyten nach Injektion von Bakterienextrakten.) F. Lange.
94 Scleroderma and Addison's Disease. (Fall von Sklerodermie und Morbus Addisonii nebst Bemerkungen über die Physiologie und Pathologie des Sympathicus und der Nebennieren.) L. Lichtwitz.
95 Clinical Reliability of Comparative Opsonin Tests in Fresh and Twenty-four-hour Old Serum. J. Zeissler.
96 *Early Diagnosis of Pulmonary Tuberculosis by Examination of Stomach Content. T. Hausmann.

91. **Threshold Percussion.**—Goldscheider answers the objections that have been raised against his method of "threshold

value percussion," that is, percussion at the limit of audibility, and then describes its field of application and the technic to the minutest details, with illustrations, as also the physics of the mechanism involved. He shows that this technic not only affords unusually fine conditions for obtaining information but that it also produces conditions otherwise unattainable and especially favorable for clinical investigation. The divergent waves become imperceptible and with the threshold technic only the axial waves are perceived. It is percussion in its purest form.

96. **Early Diagnosis of Pulmonary Tuberculosis from Stomach Contents.**—Hausmann says that for years he has been in the habit of examining the apices of every patient who applies for any ailment, and that he has been surprised at the frequency with which he found a pathologic condition in persons who had applied for relief merely on account of some dyspeptic trouble. He always informs the patient of what he has found, but with the assurance that the apical lesion is readily curable at this early stage. Some of the patients apply to other physicians for confirmation of the diagnosis, and in many instances the other physician denied the correctness of the diagnosis. There was no appreciable expectoration in these incipient cases, but examination of the fasting stomach content before breakfast showed the presence of sputum unconsciously swallowed—with tubercle bacilli—and thus confirmed the diagnosis of an apical lesion and also disclosed that it was "open." The lack of expectoration, therefore, is no evidence that the apical lesion is still "closed," as otherwise might be accepted. He urges others to examine the fasting stomach content for the presence of sputum, believing that the number of cases of so-called latent tuberculosis will be found materially reduced when this is systematically done. He adds in conclusion that every general practitioner and specialist in gastrointestinal affections should make a special point of examining the apices in every patient, and thus be able to refer the patients to the lung specialist while the affection in the lungs is still in its most promising stage for complete recovery. As it is, the lung specialist never sees the patient until the lung symptoms have attracted attention and then the most promising stage is already past. By examining the fasting stomach content the differences of opinion between diagnosticians will be settled as also the question whether the patient is completely cured or not. It will also give the lung specialists more confidence in the diagnoses of the nonspecialists.

Deutsche medizinische Wochenschrift, Berlin

December 17, XXXIV, No. 51, pp. 2201-2248

97 Origin of Emphysema. (Zur Frage nach der Entstehung der Lungenblähung.) L. Hofbauer.
98 Paralysis of Left Atrium with Mitral Defects. (Lähmung des linken Vorhofes bei Mitralfehlern.) G. Joachim.
99 *Treatment of Acute Articular Rheumatism. (Behandlung des akuten Gelenkrheumatismus.) A. Plehn. Concluded in No. 52.
100 Increased Secretion and Acidity of Gastric Juice During Menstruation. (Steigerung der Sekretion und der Azidität des Magensaftes während der Menstruation.) I. M. Wolpe.
101 Importance of Spring Fixation in Treatment of Clubfoot. (Bedeutung des federnden Fixationsverbandes in der Klumpfussbehandlung.) J. Fränkel.
102 Bacterial Origin and Clinical Study of Brain Abscess. (Hirnabszesse.) Heyde.
103 Combined Apparatus for Lumbar Puncture, Injection and Measurement of Pressure. W. Kausch.
104 Experiences with Spinal Anesthesia. (Erfahrungen auf dem Gebiete der Medullaranästhesie.) W. Tomaschewski.
105 Nomenclature of Epithelial Mouse Tumors. H. Apolant.
106 *Simple Method for Drawing Breast Milk. (Einfaches Verfahren zum Absaugen der Muttermilch.) V. Bock.

December 24, No. 52, pp. 2249-2296

107 Treatment of Heart Disease with Oscillating Currents. (Behandlung der Herzkrankheiten mit oszillierenden Strömen.) T. Rumpf.
108 Multiple Subcutaneous Electrolysis, Method for Destruction of Hairs without Leaving Traces. (Multiple subkutane Elektrolyse, ein narbenloses Zerstörungsverfahren.) Kromayer.
109 Treatment with Radium Emanations. A. Fuerstenberg.
110 Simple Mask for Inhalation. (Einfache Inhalationsmaske.) A. Hartmann.
111 *Test of Tuberculin Immunity on New Principle. (Neue Method zur Prüfung der Tuberkulinimmunität.) M. Pickert and E. Löwenstein.
112 Alleged Bacteriolytic Property of Lecithin. (Ueber die angebliche bakteriolytische Eigenschaft des Lecithins und über die Immunisierung mittels Lecithin-Typhustoxine.) J. G. Sleeswyk.
113 Immunizing Action of Lecithin Extracts of Plague Bacilli. F. Vay.
114 Elimination of Atoxyl in Urine. (Nachweis und den Gang der Ausscheidung des Atoxyls im Harn.) F. Blumenthal.
115 The Appetite. W. Sternberg.
116 Treatment of Wounds with Plaster of Paris. (Wundehandlung mit Gips.) W. Pust.

99. **Treatment of Acute Articular Rheumatism.**—Plehn says that brief transient albuminuria is a frequent accompaniment of various untreated infections, but this transient catarrh of the urinary apparatus is of no more moment than the transient catarrh of the stomach which occurs almost regularly after large doses of quinin, etc. The salicylates should not be held responsible for it. He ascribes a specific action to salicylic acid in articular rheumatism as marked as the action of quinin in malaria and mercury in syphilis. But in order to obtain the desired result it must be given in sufficient dosage. The half-hearted dosage now customary leaves the door open for all kinds of complications which proper salicylic medication would effectually avert. The method which has been applied in his service for years is to give his patient, as soon as the heart and urine have been examined, 1 gm. (15 grains) of salicylic acid in powder form, repeating every two hours, or half this amount every hour, so that the patient takes 6 gm. (75 grains) each day, suspending at night. This is continued until the temperature has been normal for three days and all pains and other disturbances have disappeared. He then gives 4 gm. (60 grains) a day for a week, and the patient is kept in bed for three days longer without any drugs. The aching joints are dressed with dry cotton and placed on cushions as comfortably as possible. This method of treatment is applied in every case, irrespective of the severity, as he regards it as the minimum necessary to cut the disease short and to ward off complications. Only when the by-effects are too severe does he modify it and this modification generally avenges itself. Women do not tolerate the acid as well as men, and consequently he reduces the dosage to 5 and 3 gm. in their case. As a rule the dosage should correspond to about 0.08 gm. to the kilogram of weight. The dose is sometimes rejected by the stomach and has to be reduced on this account, but the appetite returned as soon as the fever and pains subsided, or even earlier, and the patients almost invariably gained in weight. The drug is never given on an empty stomach. Existing acute or chronic nephritis was always favorably influenced by this treatment. In 319 cases with the heart intact valvular trouble developed only in 2 cases and in these the method had not been strictly applied. In contrast to these, heart trouble developed in 36 out of 101 cases of recurring rheumatism in which the first attack had been treated elsewhere with the customary smaller dosage. He is convinced that his method of early, vigorous and long continued salicylic treatment saves the patient from complications on the part of the heart and pleura, while it has a direct curative action on incipient serous pericarditis and pure rheumatic affections of the myocardium. Salicylic acid in doses up to 8 gm. a day, even long continued, he asserts, has no toxic action on the heart. It can be given without fear in case of compensated valvular defects and old fibrous myocarditis. In the extremely rare cases refractory to salicylic medication, the disease may yield to intramuscular injection of quinin with antipyrin, or to intravenous injection of colloidal silver. Baths and packs may re-enforce the drugs, but can never take their place.

106. **Simple Method of Drawing Breast Milk.**—A wide-mouthed bottle is filled with boiling water. The water is then poured out, and the mouth of the bottle is cooled and applied over the nipple. As the bottle cools the milk spurts from the nipple and the breast is automatically emptied, while the milk is ready for use at once, keeping warm in the warm bottle.

111. **New Test for Immunity to Tuberculin.**—Pickert and Löwenstein have found that the tuberculin cutaneous reaction can be prevented if the tuberculin is mixed beforehand with serum from a tuberculous individual taking tuberculin treatment. Normal serum has none of this neutralizing power. Under the influence of tuberculin treatment this neutralizing property appears earlier and is more pronounced in the cases

with a favorable prognosis. Tests on 104 persons confirmed the constancy of this neutralizing property of the specific serum on the specific reaction to cutaneous inoculation of tuberculin.

Deutsche Zeitschrift für Chirurgie, Leipsic

November, XCV, No. 6, pp. 561-644

117 *Serum Treatment of Anthrax. (Serumbehandlung des Milzbrandes beim Menschen.) A. Läwen.
118 *Circular Suture of Vessels After Removing Aneurism at the Knee. (Beitrag zur zirkulären Gefässnaht am Menschen.) R. Stich.
119 Experimental Research on Collateral Renal Circulation. (Zur Frage des Kollateralkreislaufs der Niere.) H. Flörcken.
120 *Surgical Treatment of Gastric Ulcer and Its Consequences. (Chirurgische Behandlung des Magengeschwürs und seiner Folgezustände.) H. Ito and Y. Soyesima.
121 *Treatment of Hypertrophy of the Prostate by Injection of Alien Blood. (Behandlung der Prostatahypertrophie mittels Injektion von artfremdem Blut.) O. Jüngling.

December, XCVI, Nos. 1-3, pp. 1320

122 *The Scopolamin Combination Anesthesia. (Die Skopolamin-Mischnarkose.) P. Sick.
123 *Surgery of the Nerves and Anatomic Healing of Nerve Injuries. (Mitteilungen aus dem Gebiete der Nervenchirurgie mit einer einleitenden Abhandlung über die anatomischen Verheilung der Nervenverletzungen.) Bardenheuer.
124 Temporary Closure of Colon During Operations on the Intestine. (Temporärer Verschluss des Colon beim Resektionen oder Ausschaltung des Darmes.) Wilms.
125 Etiology and Treatment of Inflammatory Stenosis of the Rectum. (Aetiologie und Behandlung der entzündlichen Mastdarmstenosen.) V. Gaudiani.
126 *Surgery of Biliary Apparatus. (Zur Chirurgie der Leber und der Gallenwege.) A. Jenckel.
127 Chronic Juvenile Deforming Osteoarthritis. M. Matsuoka.
128 Splint to Remodel the Arch of the Foot After Fractures. (Schiene zur Modellierung des Fussgewölbes bei Frakturen der Fusswurzel, speziell bei Calcaneusfrakturen.) W. Müller.

117. **Serum Treatment of Anthrax.**—Läwen comments on the increasing tendency to less active measures in treatment of superficial anthrax, and declares that expectant treatment, supplemented by specific serotherapy, is giving very promising results at Trendelenburg's clinic, where it has been applied in seven cases with severe general symptoms. A large intravenous dose is advised, repeating the injection the next and following days if necessary, continuing with small subcutaneous doses. Sclavo and Mendez have had wide experience with this serotherapy, and they report reduction of the mortality to 5 and 6 per cent.

118. **Resection of Aneurism in Popliteal Space.**—Stich adds another to the twenty-four cases on record in which the artery or vein was successfully reunited by a circular suture with restoration of normal conditions in the circulation in thirteen and satisfactory condition in the others. His patient can now use his leg freely, although the foot on that side is still a trifle swollen and not quite so strong as the other. The various cases are summarized.

120. **Surgical Treatment of Gastric Ulcer and Its Consequences.**—This communication from Kyoto gives the details of 21 cases in which operative intervention afforded constant and permanent relief. No operation was attempted for gastric ulcer unless there were symptoms of stenosis.

121. **Treatment of Hypertrophy of the Prostate by Injection of Alien Blood.**—Bier's experience with injections of alien blood to induce atrophy in malignant tumors suggested the application of alien blood as a means of reducing the size of the enlarged prostate. The blood carries and produces the ferments active in various diseases, and transfusion of alien blood is a harmless means of inducing fever and aseptic inflammation. The blood used was from the pig or lamb, or from cattle, and was drawn from the spurting vessels in the neck as the animal was slaughtered, into a jar containing some glass beads. After two or three minutes it is well shaken. The blood thus defibrinated is taken up in a syringe with a needle 10 cm. long, and it is injected through the perineum, the patient being in the knee-elbow position, directly into the prostate, the needle guided by the finger in the rectum. About 2.5 c.c. of the blood are injected into the lobe first reached; the needle is then withdrawn until the tip reaches the edge of the lobe, when the same amount is injected into the surrounding tissue. The needle is then turned to reach the other lobe and the same amount is injected here and into the adjoining tissue, thus using about 10 c.c. for the total injection. The details of 15 out of the 21 cases in which this treatment has been given are described in detail. From 1 to 4 injections were made in the different cases at intervals of 8 to 10 days. In all but 4 cases the ability to urinate freely was much improved and micturition became less frequent, while the stream of urine became stronger. Nothing was done for the cystitis in these cases, but conditions improved in this respect after the injections of blood. The results on the whole are regarded as promising. Bier is convinced that persons with enlarged prostate seem to be in a more advanced senile condition than corresponds to their age, so that the depression and psychic disturbances sometimes observed after prostatectomy ought not to be ascribed to the operation. The best results from the injection of alien blood were attained in the acute cases with retention and tenesmus. The relief was so prompt that Jüngling thinks it can be explained only by the development of inflammatory edema causing the spasm of the sphincter to relax. The hyperemia induced is also a factor in the results.

122. **Combined Scopolamin Anesthesia.**—Sick has taken up the scopolamin technic again after he had discarded it on account of the death of a patient with severe advanced arteriosclerosis and senile gangrene, operated on under scopolamin and morphin; the patient died in twelve hours without rousing. The favorable experiences related since from other clinics have induced him to resume again this principle of combining minute doses of several anesthetics to produce the desired anesthesia without the toxic action of large doses of any of the drugs. During the last seven months he has performed 220 major operations under the combination of scopolamin with 0.0015 gm. of morphin half an hour before the operation—he warns expressly that this dose should not be surpassed—and then ether or chloroform.

123. **Surgery of the Nerves.**—Bardenheuer's article fills 200 pages, commencing with a study of the anatomic healing of nerves after injuries, and of the time required for regeneration and restoration of function. He then describes his personal experience with plastic operations on the nerves (eight cases), also with suture of the nerves, treatment of the nerves after amputations and infectious processes, reporting a total of forty-three cases in which he has operated on nerves. He upholds the neuron theory and the assumption that the function of the nerve is dependent on the continuity of the nerve fibers with the ganglion cells and on suitable nourishment from the blood. Everything promoting the circulation of blood in the region, promotes nourishment of the nerves and ganglion cells. In resections it is important, therefore, to shorten the muscles so that they are left taut and thus have to contract at the slightest voluntary impulse; this increases the circulation in the part. The nerve is best sutured with fine catgut, passed directly through it; restoration of function may occur in from three to six weeks, but often months are required or even years. He advises exposing the nerve if it gives the degeneration reaction in two weeks after the onset of paralysis resulting from compression of the nerve during an operation or childbirth. It is thus possible to free the nerve from a hematoma or to cure an existing lesion. He lays down a number of other rules deduced from his extensive experience which embraces nearly the entire field of nerve surgery.

126. **Surgery of the Biliary Apparatus.**—Jenckel reports the experiences at Braun's clinic at Göttingen with operative treatment of 7 cases of rupture of the liver, 2 of sarcoma, 4 of syphiloma, 5 of dubious diagnosis, and a case of non-parasitic cysts in the liver.

Jahrbuch für Kinderheilkunde, Berlin

December, LXVIII, No. 6, pp. 649-772.

129 Rachitic Myopathy. R. Bing.
130 *Relations Between Thymus and Nervous System. (Zur Physiologie und Pathologie der Thymus.) K. Basch.
131 *Intoxication in Course of Nutritional Disturbances. (Ueber alimentäre Intoxikation.) H. Finkelstein.

130. **Relations Between the Thymus and the Nervous System.**—Basch relates that removal of the thymus of young dogs caused exceptional excitability of the peripheral nervous sys-

tem, as shown by electric tests. This throws new light on the relations between the thymus and nervous system. His experimental research has convinced him that the parathyroid bodies are not exclusively responsible for the etiology of tetany, but rather that a whole group of allied organs are involved. Among these the thymus takes a prominent place as reacting the most readily to general disturbances. In normal conditions the thymus seems to be connected with the growth of the body and the development of the bones in early life, and also with a certain reaction of the motor apparatus to the electric current.

131. **Alimentary Intoxication.**—Finkelstein continues his study of this subject, defining alimentary intoxication as the paradoxical reaction of the child, under the influence of disturbances from improper food, to the ingestion of sugar in amounts larger than the tolerance. He has previously shown that sugar has toxic properties for infants if given beyond the limit of tolerance. In the metabolism of a child whose nutrition is disturbed, fat has an injurious action on the sugar-assimilating functions. This causes less sugar to be assimilated than normal, the clinical manifestation of which is that the tolerance for sugar is reduced.

Medizinische Klinik, Berlin

December 13, IV, No. 50, pp. 1899-1936

132 Chorea in Children. (Chorea im Kindesalter.) F. Siegert.
133 *Modern Methods of Investigating the Internal Ear and Their Importance. (Moderne Untersuchungsmethoden des Vestibularapparates.) R. Barany.
134 *Artificial Foods. (Wesen und Bedeutung der künstlichen Nährmittel.) Lipowski.
135 *Dry Inhalation in Therapeutics. (Die Trockeninhalation nach dem Körtingschen System.) C. Schütze.
136 Experimental Research on Absorbing Capacity of Bowels During Forced Feeding and Muscular Exertion. (Resorptionskraft des Darmes bei Ueberernährung und Muskelarbeit.) F. Heinsheimer.
137 Advantages of Ocean Trip in Pulmonary Tuberculosis. (Bedeutung von Seereisen für die Therapie der Lungentuberkulose nebst Vorschlägen zur Ausführung.) W. Holdheim.

133. **Nystagmus.**—Barany reviews the important information that may be obtained from tests of the semicircular canals not only for affections of the internal ear, but for the diagnosis of tumors in the cerebellum and for estimation of the effects of trauma. He describes a fixator which records the amount of deviation of the eyes, a sliding button on a band around the forehead. To detect simulation of vertigo the patient's head is suddenly pushed over backward; nystagmus toward the affected side excludes malingering.

134. **Artificial Foods.**—Lipowski reviews the various foods on the market and remarks that if physicians would pay more attention to cooking for the sick, an important branch of the healing art, the artificial foods would not be so extravagantly over-estimated. Their only field, he thinks, is in long febrile and consumptive diseases, in which sufficient nourishment can not be obtained with ordinary food. They are also useful when it is important to refrain from exciting peristalsis in the digestive tract, as in the case of appendicitis or gastro-intestinal ulceration.

135. **Dry Therapeutic Inhalation.**—Schütze describes a method for inhalation of extremely minute dry particles. The substance used is salt. The brine is sprayed into a strong current of air, the humidity graduated so that all the moisture in the spray is taken up by the air, leaving the minute particles of the spray to form a dry dust, permitting thus extremely fine division of the particles suspended in the air. He applies this method in sanatorium treatment, the medicated air flowing down into the hall from above, there being arrangements, of course, for heating and constant renewal of the air throughout the hall. The effect of this treatment has been particularly marked in chronic catarrhal affections of the air passages.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

December, XXVIII, No. 6, pp. 637-76

138 Tardy Lactation. (Zur Kenntnis Spätlaktation.) J. K. Friedjung.
139 Anatomy of Cysts of Labia Minora. (Zur Anatomie der Cysten der kleinen Schamlippe.) J. Bondi.
140 Structure and Function of Epithelium of Fallopian Tubes. (Bau und Funktion des Eileiterepithels beim Menschen und bei Säugetieren.) J. Schaffer. Concluded.

Münchener medizinische Wochenschrift

December 15, LV, No. 50, pp. 2596-2650

141 *Forcible Opening of Amniotic Sac for Artificial Premature Delivery. (Der Blasenriss bei der künstlichen Frühgeburt.) O. v. Herff.
142 Loss of Tendon Reflexes in Functional Nervous Affections. (Verlust der Sehnenreflexe bei funktionellen Nervenkrankheiten.) R. v. Hoesslin.
143 Excitability of Respiratory Center and Consumption of Oxygen in Natural and Artificial Sleep. (Ueber Veronalnatrium und die Erregbarkeit des Atemzentrums, sowie den Sauerstoffverbrauch im natürlichen und künstlichen Schlaf.) H. Winternitz.
144 *Determination of Parasites in the Blood. (Zum Nachweis von Parasiten im Blut.) C. Stäubli.
145 Blood-Pressure Raising Substances in the Blood in Nephritis. (Zur Frage der drucksteigernden Substanzen im Blute bei Nephritis.) Schlayer.
146 *Influence of Constriction Hyperemia on Local Tuberculin Reaction. (Einfluss der Stauung auf die lokale Tuberculinreaktion.) O. Aronade and A. Falk.
147 Clinical Unity of Paratyphoid. (Zur Frage der klinischen Einheit des Paratyphus.) E. Meinicke.
148 *Neuralgia of the Kidneys. (Zur Nierenneuralgia.) Urban.
149 *Hypertrophy of Trabeculæ in Bladder Wall as Early Symptom in Tabes Dorsalis. (Die Balkenblase als Frühsymptom bei Tabes Dorsalis.) F. Böhme.

141. **Opening the Amniotic Sac for Premature Delivery.**—von Herff states that his assistant, Schäfli, has collected from the literature 700 cases in which pubiotomy was done, with full details of 664 of the cases. They show a long list of mishaps, a maternal mortality of 4.9 per cent.; of the children, 9.6 per cent., with hematoma in 17 per cent.; severe laceration in 15.4 per cent., with the death of 12.6 per cent. of these women; injury of the bladder in 12 per cent. and thrombophlebitis in 8 per cent. In 120 women examined later there was hernia from the slit in the bone in 7.5 per cent., prolapse of the vagina in 24 per cent. and permanent incontinence of urine in 4 per cent. On the basis of these unfavorable showings, von Herff urges the necessity for artificial premature delivery as a routine measure instead of attempting pubiotomy. The simplest means to induce it is by opening the bag of waters, not by a puncture, but by tearing it open, allowing from 50 to 100 c.c. of fluid to escape, or even more. In 718 cases in his service in which this measure was applied, the total mortality of the children was 2.8 per cent. and none of the mothers showed any injury from it. In 78 women with contracted pelves childbirth was facilitated in this way in 100 instances. It is not attempted until he is convinced that it is practically impossible for the head to pass. Of the 101 children, 80 per cent. left the clinic in good condition and are still thriving, although in 73 per cent. of the women the true conjugate ranged from 7.5 to 8.5 cm. His aim is to facilitate as much as possible the difficult delivery in such cases, and nothing, he says, accomplishes this so simply and easily as this opening the bag by a simple tear, merely spreading the branches of the little instrument; an ordinary sound will not do. He adds that artificial premature delivery is contraindicated in primiparæ unless the pelvis is very much deformed. The state of the cervix and os is immaterial, but it is important to allow plenty of fluid to escape. The average duration of labor is about twenty-six hours, but in family practice it may be shortened by vaginal douches.

144. **Determination of Parasites in the Blood.**—Stäubli dissolves out the red corpuscles, which renders it much easier to detect the parasites. The freshly drawn blood is diluted with a large amount of 3 per cent. acetic acid and then centrifugalized. He found this method especially simple and convenient in differentiation of trichinosis, malaria, etc.

146. **Influence of Local Congestion on Local Tuberculin Reaction.**—Aronade and Falk noticed that the site of a specific local tuberculin reaction on the arm of a girl with miliary tuberculosis became covered with minute hemorrhages after application of a constricting band above, while the control papule showed nothing of the kind. They then attempted to induce this phenomenon artificially, and they report the results in 90 cases. The congestion hemorrhages were constantly observed, even after an interval of fully six weeks after the tuberculin inoculation. The diagnostic importance of the phenomenon consists in the fact that these hemorrhages may be observed even when there is no appreciable reaction to the tuberculin inoculation; they never occur at the control spots.

148. **Renal Neuralgia.**—Urban reports a case of unmistakable pure neuralgia of the kidney under observation for five years. The patient was a tailor's wife, 26 years old, and the recurring attacks of intense pain in the right side were ascribed to gallstones, but an exploratory laparotomy disclosed nothing pathologic. The attacks continued and the appendix was removed during an attack of acute appendicitis, but still the pains in the right side constantly recurred and the patient insisted on another operation. The right kidney was exposed and found apparently normal, but decapsulation was done, freeing the kidney completely from the capsule all around. The dull ache was banished, and there has been no recurrence of the pain since. The only explanation can be that the capsule did not fit the kidney. It seemed to be normal in every respect, but must have been a size too small.

149. **Hypertrophy of the Bladder Trabeculæ as Early Sign of Tabes Dorsalis.**—Böhme asserts that after exclusion of other causes which might induce hypertrophy of the bladder wall, its discovery is strong evidence in favor of tabes. In a certain number of cases it is the earliest appreciable symptom. Contrary to the hypertrophy observed with obstruction of the outlet, as in case of enlarged prostate or stricture, with the pure tabes "beam bladder"—as the Germans call the condition with hypertrophied trabeculæ—the ramifications of the trabeculæ are enlarged regularly and delicately throughout, not predominantly in the vicinity of the trigonum, fundus and side walls as is observed in case of enlargement of the prostate. The mechanism, however, is practically the same—the bladder seeking to compensate by extra muscular effort for the difficulty experienced in voiding its contents. Retention of urine in pure hysteria does not entail this enlargement of the trabeculæ—at least he observed no tendency of the kind in a case of hysterical paralysis of the bladder with retention of urine for seven weeks. He describes eight cases in detail; in all the patients applied to the physician merely for relief from the bladder symptoms and the difficulty in urination. The cystoscope revealed the hypertrophied trabeculæ, suggesting incipient tabes, confirmed by the later course of the cases. It was either the earliest symptom or accompanied some other early manifestation. The cystoscope is able to reveal the condition before a tendency to retention and residual urine develops.

Zeitschrift für klinische Medizin, Berlin

LXVII, Nos. 1-3, pp. 1-251. Koranyi Festschrift. Last indexed Jan. 2, p. 84

150 Threshold Percussion of Stomach. (Die Schwellenwertperkussion des Magens.) A. v. Koranyi.
151 Sensory Roots of the Spinal Cord. (Zur Physiologie und Pathologie der sensiblen Wurzeln des Rückenmarks.) R. R. Balint.
152 *Roentgen-Ray Treatment of Blood Diseases. (Röntgenbehandlung von Blutkrankheiten.) J. v. Elischer and K. Engel.
153 *Experimental Study of Origin of Nephritic Edema. (Entstehung der nephritischen Oedeme.) J. Bence.
154 *Diabetes Insipidus. K. Engel.
155 Phagocytosis and Opsonins. J. Kentzler.
156 Changes in Virulence of Tubercle Bacilli in Course of Specific Treatment. (Virulenzveränderung der Tuberkelbazillen im Verlaufe der spezifischen Behandlung.) G. Kiralyfi.
157 *Action of Kuhn's Lung Suction Mask in Heart Disease. (Wirkung der Kuhnschen Lungensaugmaske bei Herzkrankheiten.) G. Morelli.
158 Refraction Findings in Blood Serum After Ingestion of Salt. (Verhalten des Refraktionswertes des Blutserums nach Aufnahme von Kochsalz.) J. v. Benczur.
159 Connection Between Albumin Content of Blood Serum and Serous Effusions. (Zusammenhang des Eiweissgehaltes des Blutserums und der serösen Flüssigkeitsergüsse.) K. Engel and O. Orszag.
160 Perforation of Aortic Aneurism into Superior Vena Cava. A. Barcza.
161 Passage of Pancreatic Juice into the Stomach. (Uebertritt von Pankreassaft in den Magen.) B. Molnar.
162 Nitrogen in Sputum with Gangrene of Lung. (Stickstoffgehalt des Sputums bei Lungengangrän.) O. Orszag.
163 Inhibiting Action of Yoghurt Bacillus on Colon Bacillus. (Wirkung des Bacillus bulgarus auf den Bacillus coli.) T. v. Kern.
164 *Cammidge Pancreatic Reaction. N. Roth.
165 *Experimental Research on Antagonistic Action of Adrenalin and Calcium Chlorid. (Zur antagonistischen Wirkung des Adrenalins und Chlorkalziums.) F. Schrank.
166 Action of Antipyretics on Phagocytosis. J. Kentzler and J. v. Benczur.

152. **Roentgen-Ray Treatment of Blood Diseases.**—Elischer and Engel report from Koranyi's clinic 44 cases of leukemia, lymphosarcoma or mediastinal tumors treated with the Roentgen rays since 1904, and they discuss these experiences in detail. It is especially important that this treatment should be applied in the early stages; later, much more intensive treatment becomes necessary, with all its inherent dangers. They advise radiotherapy for all tumors in the mediastinum and all phenomena suggesting lymphomatosis and leukemia. They remark that it is impossibile to foretell whether enlarged lymph glands in the neck will develop into a simple lymphoma, pseudoleukemia, lymphosarcoma or tuberculous process, but as the Roentgen rays have a beneficial action in all these conditions, they advise early and vigorous Roentgen treatment without waiting for differentiation. In the early stages of cervical glandular processes and mediastinal tumors there need be no fear of destroying large masses of tissue with attendant intoxication, and consequently the treatment can be pushed with great energy. For ten or fourteen days they advise strong daily exposures for eight or ten minutes. Then the exposures are suspended while the patient's sensitiveness to the rays is determined and the appearance of by-effects awaited. After this period of observation the treatment is continued until signs of improvement or of the inefficacy of the measure become evident. They keep up the exposures for two or three months in case of a mediastinal tumor. If good results are not obtained with ten-minute exposures, the patient's susceptibility to the rays is so slight that it is useless to expect to influence the lesion unless the radiotherapy is applied so vigorously that an *x*-ray burn is almost inevitable. In leukemia the early commencement of treatment is even more important, as in the later stages the exposures must be made with great caution. At first short exposures are made to avoid inducing radiotoxic symptoms and especially to avoid injuring the sensitive capsule of the spleen. There are large masses of tissues to be influenced in leukemia and consequently there is the greater danger of intoxication from absorption of the decaying masses. After eight or ten exposures they suspend treatment for a week, but supervise the patient's blood and weight. It is particularly important not to begin treatment too vigorously in leukemia, and to supplement the radiotherapy with hygienic-dietetic measures. The patient must also be kept under supervision later and treatment resumed at the first sign of recurrence, even if only objective. The main point in leukemia is to work with as small dosage of the rays as possible, utilizing the late action of the rays. Patients unable to have the benefit of hygienic-dietetic measures and freedom from care are not so liable to derive benefit from the radiotherapy, but under favorable conditions it seems to postpone long the fatal outcome while relieving the patients of their pain. In many cases, however, notwithstanding great improvement, yet the danger of acute exacerbation seems to be made more impending by the radiotherapy. In one case, six courses of Roentgen treatment were given in less than four years and always with marked benefit, but there is no case on record of actual permanent recovery. The tissues in time seem to become immune to the action of the *x*-rays, which thus lose their influence. The tubes are of the 4 or 5 strength (Walter's scale), and a tin-foil filter is used with them. Of the 19 cases of leukemia, 10 of the 13 myelemic and 2 of the 6 lymphemic patients were very much benefited by the treatment.

153. **Origin of Nephritic Edema.**—Bence relates experiments which show that edema is the result of the passage of fluids from the tissues into the vessels, not the reverse, and that this occurs without the aid of fluid from without. If fluid is ingested it merely accelerates the process without modifying it essentially.

154. **Diabetes Insipidus.**—Engel reports seven cases studied from various points of view, especially to determine whether the kidneys had lost their ability to secrete a concentrated urine and whether this could be regained under favoring conditions.

157. **Suction Lung Mask in Heart Disease.**—Morelli has applied Kuhn's mask in several cases of heart affections, aiming to act on the heart by the unusual muscular efforts made to obtain breath enough when inspiration is partially obstructed. The patient has to breathe deep and the contents of the chest

are thus mobilized and exercised to an unusual extent. His impression is decidedly favorable to the use of the mask in affections of the right side of the heart. The subjective disturbances and palpitations of nervous origin also seemed to be improved and the anemia benefited.

164. **The Cammidge Pancreatic Reaction.**—Roth's experiences failed to confirm the reliability and constancy of this reaction.

165. **Antagonistic Action of Adrenalin and Calcium Chlorid.**—Schrank studied the action of adrenalin mixed with calcium chlorid on the enucleated eyeball of the frog and also whether the chlorid was able to prevent the development of arteriosclerosis when adrenalin was injected into rabbits and, further, whether it was able to prevent glycosuria in dogs and rabbits when the chlorid was injected with or soon after the adrenalin. The results were positive in all the experiments except in those with arteriosclerosis. The chlorid delayed the dilatation of the frog eyeball and prevented the development of the glycosuria.

Zentralblatt für Chirurgie, Leipsic

December 26, XXXV, No. 52, pp. 1545-1568

167 Operative Treatment of Old Fracture of Patella with Wide Gap. (Zur operativen Behandlung veralteter Kniescheibenbrüche mit grösserer Diastase der Fragmente.) H. Turner.

Zentralblatt für Gynäkologie, Leipsic

December 26, XXXII, No. 52, pp. 1649-1680

168 Perforation of the Uterus in Abortive Maneuvers. W. Weibel.
169 Isolated Laceration of Hymen from a Fall. (Fragliche Entstehung eines Isolierten Hymenrisses.) R. Silbermann.
170 Laminaria. (Sind Quellstifte notwendig?) C. Fleischmann.

Gazzetta degli Ospedali e delle Cliniche, Milan

December 24, XXIX, No. 154, pp. 1653-1660

171 Pathogenesis of Hemolytic Jaundice. (Patogenesi dell'ittero da emolisi.) A. Massaglia and L. Tarabini.

Policlinico, Rome

December, XV, Surgical Section, No. 12, pp. 521-564

172 Two Cases of Meningocele with Hernia of Spinal Cord. (Sul meningocele con procidenza di midollo.) M. Francini.
173 Elastic Fibers of Ovary in Relation to Hyaline Degeneration of the Vessels and Graafian Follicles. S. Puglisi-Allegra.
174 Endothelioma of Gasserian Ganglion. R. Giani. Commenced in No. 11.

December 20. Practical Section, No. 51, pp. 1605-1636

175 Symptomatology of Tuberculin Reactions. (Semeiologia delle reazioni tubercoliniche.) G. Massini.

Sei-i-kwai Medical Journal, Tokyo

October 31, X, No. 320, pp. 335-342

176 Pyosalpynx. K. Yamada.

Nordiskt mediciniskt Arkiv, Stockholm

XLI, Internal Medicine, No. 2. Last indexed Oct. 24, p. 1476

177 *Recovery After Long Duration of Insanity. (Spätheilung von Psychosen.) A. Petren. Concluded.
178 A Study of Uric Acid. J. P. Chrom (in English).
179 Keloid from Tattooing. (Fälle von Tatowierungskeloiden.) E. Welander.
180 Absorption of Insoluble Mercurial Preparations Injected into the Muscles. (Resorption der unlöslichen Quecksilberpräparate bei intramuskulärer Injektion.) S. Birger.

Surgery No. 1. Last indexed July 25, p. 360

181 *Treatment of Inflammatory Affections of the Ovaries and Fallopian Tubes. (Behandlung entzündlicher Adnexerkrankungen.) J. Kaarsberg.
182 *Habitual Dislocation of the Shoulder Joint. (Die habituelle Schultergelenksluxation.) K. Dahlgren.
183 *Non-parasitic Cysts in the Spleen. (Zur Kasuistik der nichtparasitären Milzcysten.) E. Landelius.

177. **Recovery After Long Duration of Insanity.**—Petren's attention was attracted to this subject by 8 cases in his own experience, and he has collected from the literature 26 similar cases in which patients, after being absolutely insane for from 4 to 12 years, were completely restored and had no recurrence under observation for from four to twenty years after the recovery. The patients' ages ranged from 26 to 58 when they first became insane, with the exception of 3 between 14 and 17 and one boy of 6. The details are given in a large table, showing the assumed cause for the insanity, the character of the mental affection, the causes influencing recovery, its course and other details. The monograph fills 328 pages and allows certain conclusions, one being that these tardy recoveries, with complete restoration of sanity, were mostly in the form of manic-depressive insanity, associated in some with paranoia. The latter deserves special attention, to avoid errors in prognosis. In a number of these cases dismissal from the asylum aided materially in the final recovery. Next to this form of insanity, catatonia showed the largest number of tardy recoveries, both among those with an acute onset and those with a more gradual development of the affection. External causes were exceptionally frequent in the etiology of this form, which included both the variety with stupor and that with excitement. In none of these cases had there been a previous attack, but a previous attack had occurred in 7 of the 16 cases of the manic-depressive form and two attacks in another. Tardy recovery also occurred in 4 cases of what Magnan calls *délire systématisé*. In several of the cases related a divorce had been obtained on the ground of incurable insanity, and Petren warns that the prognosis in these forms of insanity should be more guarded.

181. **Treatment of Inflammatory Affections of the Ovaries and Tubes.**—Kaarsberg reviews the experiences at Copenhagen with the three groups of the affection, those with and those without suppuration and the tuberculous. The possibility of spontaneous healing of the tuberculous form justifies conservative treatment. A conservative laparotomy was done in twelve of the twenty-eight cases in this group and the results are very encouraging. The details of the 289 cases are tabulated.

182. **Habitual Dislocation of the Shoulder.**—Dahlgren applies this term to a condition of weakness of the joint in which any moderate external or internal force is sufficient to throw the joint surfaces out of their normal position in respect to each other. Excluding cases in which the trouble is the result of syringomyelia, he reviews 42 cases from the literature and some in his own experience, and insists that proper treatment of the primary luxation would prevent the tendency to recurrence. The only reliable means of treatment is by operative intervention and the joint should be opened for extraction of any movable bodies and to correct the condition as indicated. Good results have been obtained by merely taking up a fold in the capsule to make it smaller, as he describes in detail.

183. **Non-Parasitic Cysts in the Spleen.**—Landelius gives the details of a case and adds forty-seven from the literature. In his case a complete cure was realized by evacuation of the cyst with fixation and drainage.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

THE SEXUAL QUESTION. By August Forel, M.D., Ph.D., LL.D., formerly Professor of Psychiatry at and Director of the Insane Asylum in Zurich (Switzerland). English translation by C. F. Marshall, M.D., F.R.C.S., Late Assistant Surgeon to the Hospital for the Diseases of the Skin. London. Pp. 536, with illustrations. Cloth. Price, $5. New York: Rebman Co. By error the price of this work was previously printed as three dollars.

SAUNDERS' POCKET MEDICAL FORMULARY. With an appendix. By William M. Powell, M.D., Author of "Essentials of Diseases of Children." Ed. 9. Adapted to the Eighth Revision (1905) of the U. S. Pharmacopeia. Flexible leather, with pocket and flap. Pp. 308. Price, $1.75. Philadelphia: W. B. Saunders Co., 1909

MARRIAGE AND DISEASE. An Abridged Edition of Health and Disease in Relation to Marriage and the Married State. Edited by H. Senator and S. Kaminer, Berlin. Translated from the German by J. Dulberg, M.D., Manchester, Eng. Cloth. Pp. 452. Price, $2.50. New York: Paul B. Hoeber, 1909.

CONSTIPATION AND INTESTINAL OBSTRUCTION. By Samuel Goodwin Gant, M.D., LL.D., Professor of Diseases of the Rectum and Anus in the New York Post-Graduate Medical School and Hospital. Cloth. Pp. 559, with illustrations. Price, $6. Philadelphia: W. B. Saunders Co., 1909.

STATE HOSPITALS BULLETIN, Published Four Times a Year by Authority of the New York State Commission in Lunacy. Vol. 1. No. 3. December, 1908. Paper. Pp. 505. Single copies 50 cents. New York: State Hospital Press.

NEW YORK STATE LIBRARY YEARBOOK OF LEGISLATION, 1907. Edited by Frederick D. Bramhall, Legislative Reference Librarian. Paper. Price, $1. Albany: University of State of New York, 1908.

HISTORY OF THE CLEVELAND HOMEOPATHIC COLLEGE FROM 1850 TO 1880. By D. H. Beckwith, M.D., Emeritus Professor, Cleveland Homeopathic Medical College. Paper. Pp. 72.

THE AMERICAN TROPICS. By William Thomas Corlett. Paper. Pp. 221, with illustrations. Price, $1.50. Cleveland: The Burrows Brothers Co., 1908.